



COMMONWEALTH OF AUSTRALIA

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SENATE

ENVIRONMENT AND COMMUNICATIONS REFERENCES
COMMITTEE

Status, health and sustainability of Australia's koala population

MONDAY, 1 AUGUST 2011

MELBOURNE

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SENATE
ENVIRONMENT AND COMMUNICATIONS REFERENCES COMMITTEE
Monday, 1 August 2011

Senators in attendance: Senators Bob Brown, Cameron, Di Natale and McKenzie

Terms of reference for the inquiry:

To inquire into and report on:

The status, health and sustainability of Australia's koala population, with particular reference to:

- a. the iconic status of the koala and the history of its management;
- b. estimates of koala populations and the adequacy of current counting methods;
- c. knowledge of koala habitat;
- d. threats to koala habitat such as logging, land clearing, poor management, attacks from feral and domestic animals, disease, roads and urban development;
- e. the listing of the koala under the Environment Protection and Biodiversity Conservation Act 1999;
- f. the adequacy of the National Koala Conservation and Management Strategy;
- g. appropriate future regulation for the protection of koala habitat;
- h. interaction of state and federal laws and regulations; and
- i. any other related matters.

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ACTING CHAIR (Senator Cameron): I declare open this public hearing of the Senate Environment and Communications References Committee in relation to its inquiry into the status, health and sustainability of Australia's koala population. These are public proceedings. The committee may also agree to a request to have evidence heard in camera or may determine that certain evidence should be heard in camera. I remind all witnesses that in giving evidence to the committee they are protected by parliamentary privilege. It is unlawful for anyone to threaten or disadvantage a witness on account of evidence given to a committee and such action may be treated by the Senate as a contempt. It is also a contempt to give false or misleading evidence to the committee. If a witness objects to answering a question, the witness should state the ground upon which the objection is to be taken and the committee will determine whether it will insist on an answer, having regard to the ground for which it is claimed. If the committee determines to insist on an answer a witness may request that the answer be given in camera; such a request may always be made at any other time. The committee has resolved that questions taken on notice should be returned by close of business Wednesday 10 August 2011.

I welcome everyone here today. Professor Carrick, you would obviously be aware that I am unable to attend today except by teleconference. This is because I have a crook back. I am asking Senator Brown, for practical reasons, to chair the committee not in my absence but while I am on the telephone hook-up. I hand it over to you, Senator Brown.

ACTING CHAIR (Senator Bob Brown): Thank you and we wish you well as the day unfolds.

Senator CAMERON: So do I. I wish myself well!

ACTING CHAIR: I welcome Professor Frank Carrick. Thank you for coming to Melbourne to talk to us today. The committee has received your submission. Are there any amendments or alterations you would like to make to that submission?

Prof. Carrick: No, I do not think so. I commiserate with Senator Cameron and hope he gets well soon.

Senator CAMERON: Thank you.

ACTING CHAIR: Would you like to make a brief opening statement?

Prof. Carrick: I thank the committee for the opportunity to appear today. I think the key message I would like to get across is that the ultimate driver of koala decline is destruction and degradation of habitat. There are other contributing factors, but it is the key driver. I believe the top priority for Commonwealth action is to list the koala so that it then has the protection of the EPBC Act and access to the resources that will assist its conservation in other respects. The inaction advocates are using the same sorts of tactics as big tobacco employed so successfully as a stalling tactic, asserting that legitimate scientific caveats amount to an absence of probable cause. I will examine the situation for you and speak about the Queensland situation, which is replicated I believe largely in New South Wales. At St Bees Island we have an apparently stable population. There is no habitat alienation. The typical koala infectious organisms are present but have no real impact. This is the control site. Then we have Springsure where the population is collapsing from a variety of contributors. In South-East Queensland the population is collapsing from a variety of contributing causes.

ACTING CHAIR: Can you tell us about Springsure? Is that a district?

Prof. Carrick: It is in Central Queensland. Oakey in South-East Queensland, on the other side of the range, is another place where the population is collapsing. So we have a consistent series of issues. Other folk in Queensland have looked at the mulga lands. The collapse that they previously identified there which was about 50 per cent since Ben Sullivan's work now looks more like 80 per cent. We now have a whole series of declines. To say that this is a patchy situation, someone has to present areas other than in Victoria and South Australia, which are aberrant in some respects and deserve a different analysis. For everywhere else, someone has to show us the populations that are expanding if we are being told that it is patchy.

The only place outside of Victoria and South Australia that I know of where there has been a recent increase is Gunnedah. That situation has been driven largely because there was a very big tree replanting scheme there to address previous deforestation and the resulting salinity. Fortunately, koala trees went in and we now have population expansion, despite the factors that account for decline in other places such as the mortality from dogs and vehicles.

If we then pretend we are scientists, we erect a null hypothesis, which is what scientists usually do, and say that there has been no change in the koala population. So we have gathered as much evidence as we could within our

resources. All the evidence indicates that almost 100 per cent of observations on the mainland, other than in South Australia and Victoria, show the null hypothesis ought to be rejected and that there has been a substantial change to the status quo. Gunnedah, paradoxically, also illustrates that loss of habitat is the key factor; not that we do not have to do the other things but the most effective thing that the Commonwealth can do is to list the koala.

ACTING CHAIR: Thank you very much. Firstly, can you tell the committee about your involvement in the study of the koala and how you come to be sitting here today?

Prof. Carrick: I began studying koalas about 40 years ago when I was doing my PhD at the University of New South Wales. You would think I would have been sensible enough to have recognised that it was time to do something else. I have been at the University of Queensland for 30-odd years and during that time what was basically an interest in koala reproduction expanded into disease, broader ecological issues and population genetics. My interests have become more ecological and less physiological, but we still dabble in physiology.

ACTING CHAIR: You said in your introduction that there has been an 80 per cent reduction in the mulga lands in Queensland.

Prof. Carrick: Yes. But that is not our work; that was Clive McAlpine and co. They have used the same methodology, essentially, as Ben Sullivan, who reported in 2002 on the population status. They replicated more or less the same thing. The methodology was very close though not precisely the same, but that does not alter the outcomes. It now looks like what they thought had been a 50 per cent decline, when they do the sums again it is more like an 80 per cent decline since 2002.

ACTING CHAIR: And that paralleled not loss of habitat per se but the drought. Is that correct?

Prof. Carrick: Correct. Well, it is loss of habitat but not because people chopped the trees down but because the trees died. I think that is the key element. The best data really on the response of koalas to typical drought was the work done by Greg Gordon and co. at Mungallala Creek in southern Queensland. That was a drought that lasted three years and it resulted in a lot of defoliation of canopies but along the creeks where the water table was high enough trees persisted and the relic population of koalas persisted which they could then expand when it rained again. Raining again, which it has done of course in a lot of parts of Queensland, is not going to do any good because the trees have not just lost their leaves, they are actually dead. From advice from some of my colleagues like Alistair Meltzer, I think what we are seeing there is probably a long-term process where the *Eucalyptus tereticornis* forests along the waterways, which are really the refugia in drought times for koalas, are going to be replaced by *Eucalyptus camaldulensis*, the river red gum. That is fine but that is probably going to take 200 or 300 years and the koalas may find it difficult to have a feed in the meantime. So I think what we are seeing is actual contraction of available habitat in those very widely distributed but quite sparse populations. I think they have been hammered very hard and there are not prospects that they are going to recover anytime soon.

ACTING CHAIR: You spoke about the improvement of the population at Gunnedah following planting of trees. That must have been some time ago.

Prof. Carrick: Yes, 1990 I think it was. I could check on that but it is about that period of time. A little bit later than that, but it was a large Landcare program to counteract salinity and very substantial areas of trees were put in, largely eucalyptus, and they are now full of koalas, thankfully.

ACTING CHAIR: I will ask a few more questions and then go to the other people on the committee. You have spoken about the difference between the northern and southern koala populations. I wanted to ask what is the difference between them. As a layperson looking at these koalas, am I going to see any difference and are there any grounds for thinking that they really are different species or subspecies?

Prof. Carrick: I guess there are two parts to the answer. One, earlier folks thought they were different subspecies and as far as I know nobody has applied to the committee for zoological nomenclature to suppress the existing subspecies status. So by definition there are three subspecies until someone changes it. I do not believe there is much difference between the New South Wales and Queensland koalas. I cannot tell the difference. It does not take a koala expert to tell the difference when you see a Victorian and Queensland koala side by side, though. For a start, the Victorian ones are half as big again. They do not just happen to grow that big in Victoria. I think you could take a Queensland koala into Victoria and it could live its life here and it would never get to be half as big again as when it started, and vice versa. So I think there has been selection over time. Besides the obvious things like the colour and the size—

ACTING CHAIR: Is there a difference in colour?

Prof. Carrick: I think that is probably not a huge issue but, yes, the koalas in Victoria tend to be darker. If you look at physiology though, they have differences in their thermoregulatory and water balance physiology. Paradoxically, they certainly do not breed very well in captivity compared to in the wild, and that is why overseas,

by and large, there are Queensland or New South Wales koalas, not Victorian koalas. Empirically they have discovered that their reproduction in captivity is not particularly good. There are other contributors. If you have got an animal that is half as big again, by and large you have to feed it half as much again. In the zoos, a koala is a koala. So they make a prudent, pragmatic decision.

In a whole heap of ways they tend to react differently. Empirically the koalas are telling us this. If you look at the suite of problems for koalas in southern Australia, they are the converse of what is happening in New South Wales and Queensland. We are trying to keep populations propped up. Down here they are trying to suppress them with contraception and various other techniques. The koalas are telling us they are different. I can take the blame for it. I think Tony Lee and I were the first to put in writing that there was no good evidence that there were three subspecies that happened to coincide with state boundaries, which is always a bit of a suspicion. We suggested they might be part of a north-south cline. But actually there is no evidence that there is a cline. If you look at the genetics of the koalas in Victoria, yes, there is no molecular genetics difference that says they are quite different and that you would use the conventional tools to decide that we should give it a sub specific or higher separation. But if you look at the Victorian ones they are all genetically impoverished. That is partly because of management techniques. The milieus in which they operate are quite different. I think they are demonstrating that they ought to be treated differently and I think there are some physiological and morphological grounds that back that up.

ACTING CHAIR: When you say they are genetically impoverished do you mean the individual is or that, as a population, there is not much difference between them?

Prof. Carrick: The population. Also, whilst the problem for the management authorities in Victoria is too many koalas, we have seen what happened to the Tasmanian devil when something popped up out of the blue. Although there is more to the transmissible cancer than just the fact that there is a low genetic diversity population, that looks like it is one of the key elements as to why this has popped up and then spread like wildfire through the whole population. There is a concern in relation to the southern koalas, which are very low genetic diversity—I think I put a bar graph in my submission. The least diverse Queensland population is about twice as diverse as the most diverse Victorian one.

ACTING CHAIR: When you say cline, do you mean a gradient?

Prof. Carrick: A gradient, yes.

ACTING CHAIR: On the difference between the north and south, what about the Strzelecki koala population? We will be asking people about that later today. Do you have any information for the committee about differentiation between that population and the rest of the Victorian population of koalas?

Prof. Carrick: No, I do not have that. As I understand it they are a bit more diverse than the rest of Victoria, but they all look pretty pale compared to New South Wales and Queensland.

ACTING CHAIR: Do you know anything about the Bermagui population? We have been told that there are about 50 in that region which may be genetically diverse compared to the Victorian population.

Prof. Carrick: That may well be. I do not know much more about it except that there was talk of an encouraging recovery, and the encouraging recovery was from a few to maybe 50—somewhere between 20 and 50 individuals. That is good—I am not being cavalier about it; it has been a lot of hard work by a lot of people—but we are looking at a situation in the Bega Valley and surrounding areas where literally millions of koala pelts were harvested for the London fur markets in the late 1800s. With all the improved technology of transport, firearms and the rest, I do not think there is any show of harvesting a million koala pelts.

ACTING CHAIR: Do you have any information for the committee on what the global population of koalas might be?

Prof. Carrick: No, I do not. I think I share one thing with the Threatened Species Scientific Committee: I do not think there are the data to tell us that. But I do not think it matters. I think that what is absolutely blindingly clear is that the populations are in decline. It is the trend that counts, and in New South Wales there have been a whole series of local extinctions documented as they watched the populations spiral down till they were no longer there. We are seeing that in South-East Queensland, the stronghold of koalas. Population after population is in decline.

Even though I have said rude things about simple solutions, one fairly straightforward way of looking at it is that, if we do not cut down another gum tree ever in Australia, the koala population in the wild is likely to stabilise at somewhat less than it is now as flow-on effects kick in. If we cut down every gum tree in Australia, there will be no more wild koalas. Somewhere along there, where we decide how much habitat we leave, will ultimately determine the number of wild koalas there will be.

ACTING CHAIR: Finally from me, do you see a case for the Threatened Species Scientific Committee to be looking at those two populations differently in terms of recommending a listing under the EPBC Act?

Prof. Carrick: The southern and northern?

ACTING CHAIR: Yes.

Prof. Carrick: Yes, I do. I think there is clearly a case. It is not as obviously specified as something to do as in the US Endangered Species Act, which deals with this much better: if there is a problem with a species in any significant part of its range, you put it on the list and treat it in that part of its range. That is what I understand is available here. As I understand it, the minister is the chief taxonomist and chief ecologist of Australia and a species is, for the purposes of the act, what the minister declares it to be. So it is well within the power of the minister—as I understand it as a cheap constitutional lawyer—to declare that northern and southern koalas are different and that therefore the EPBC Act could be applied to both but in quite different ways. So it gets over one of the objections the committee had, or one of the difficulties the committee apparently struggled with: if they list it then the Vics and the crow eaters are going to go berserk, because it may well have unintended consequences for their management plan. I understand that, and I think that needs to be avoided, but it should not be beyond the wit of intelligent people to come up with a mechanism that will do that. I think the most straightforward way is just to list them separately, and then it enables the provisions of the EPBC Act to be applied differently.

ACTING CHAIR: Thank you. I cannot guarantee it, but I would be fairly reassuring that the minister will be reading the transcript. Senator Cameron, do you want to ask a question?

Senator CAMERON: Yes, I have a couple of questions. Professor Carrick, one of the issues that are continually raised is the lack of demographic information available on koalas, and the Threatened Species Scientific Committee have said that, because of that lack of information, they have had to apply their professional judgment. It seems to me that the Threatened Species Scientific Committee have applied professional judgment in a different way to most of the experts on koalas in the field. Is that a fair assumption? Is there some reason why they would say that koalas are not threatened?

Prof. Carrick: I admit to a certain amount of puzzlement when reading the letter. I think if Bob Beeton had signed it after the first paragraph it would be an objectively correct assessment that there is clear evidence that the koala should be listed but that the evidence is not as robust as we would like it to be. The Commonwealth authorities have persistently refused applications to provide funding for koala surveys and establishment of long-term monitoring sites. They then use the absence of detailed quantitative data at intervening points on a broad scale as a reason to refuse to recognise the clear evidence of the decline in those populations we do have hard data for. Then they use that to justify failing to list the koala under the EPBC Act, so this restricts access to survey and monitoring funds and so it ever goes on. Move over, Joseph Heller! This is the ultimate catch-22. If I were uncharitable, I could say that it looks to me akin to a process that is currently going on in the US Congress at the moment, where the Tea Party biologists have prevailed over the counsel of the moderate amongst their group—but that is only a suspicion.

Senator CAMERON: The other issue that comes forward is the obligation of the Threatened Species Scientific Committee to operate under the terms of the EPBC Act. You may not have looked at in this way, but do you have any views in relation to any changes that are required in the act to make it easier to list a threatened species?

Prof. Carrick: Again, Senator Cameron, if you will indulge me, my view is that the EPBC Act was specifically written to minimise the Commonwealth's need to intervene in threatened species issues. Whether by accident or by design, what it set out to do was to have the Commonwealth not intervene until a species was on the brink of extinction, something which history tells us is almost impossible to recover from, despite the application of large amounts of resources then. The time to apply resources is when you can (a) monitor populations properly to work out what is working and what is not and (b) when there are enough of them to have a celluloid cat in hell's chance at recovery. The act sort of allows it now, but I think in more explicit wording that says that in terms of national significance this does not mean that every population of a particular taxon throughout the entire country has to be in decline before the Commonwealth takes action. At the moment, 'national significance' is being interpreted in that kind of restrictive way.

As I suggested in my submission, if we look at the coastal Queensland population and the coastal New South Wales population, they are being hammered. They are in evident decline. They are also the stronghold of koalas in those two states, so if the bulk of the koalas in the two states are under severe threat and those two states have most of the koalas in Australia, how this is not of national significance, to me, defies the common-sense test. However, if that is a genuine problem with the act then the act needs to be amended so that it is clear that where a

significant part of a species is in trouble then that species can enjoy the protection of the act. We were told in Queensland that this was not possible under the Nature Conservation Act, but it turned out that it is—it was possible to define the South-East Queensland bioregion koalas as an entity and to treat them and list them separately from the rest of Queensland.

ACTING CHAIR: Thank you, Senator Cameron. We have just had some friends from the media come into the room, so I just want to pause here to get the okay from the committee for the proceedings to be covered by the camera and the journalists who have come in. Is everybody okay with that?

Senator CAMERON: Yes.

ACTING CHAIR: Thank you very much. We will proceed.

Senator CAMERON: Professor Carrick, what is the correlation between 'decline' and 'threatened'? Is it always the position that, if there is a decline, that would become a threatened species?

Prof. Carrick: If the decline is persistent, yes, you eventually get to a population size where what has been called by wiser ecologists than me the 'small population paradigm' kicks in. So the threatening processes just overwhelm the population's natural resilience and capacity to respond. A decline in population need not necessarily be a disaster, but if that decline persists long enough, as it is doing in the case of the koala, then it is a big, big problem.

Senator CAMERON: Professor McAlpine says—and I think you have reinforced this a bit this morning—that you need to deal with this on the basis not of numbers but of trends, and you also have to have consistency in your approach. Do you agree with Professor McAlpine's view on that?

Prof. Carrick: Yes, I do. When you say 'consistency of approach', if we are talking about detailed survey methodology, it has to be a robust and objectively rational survey methodology, but there are horses for courses. In the mulga lands, where you have very sparse, widespread populations, the same techniques that are applicable in the denser coastal populations are not very productive. I point out there that, in terms of doing the most detailed kind of survey, if you look at an area transect approach, in the Koala Coast 4,500-odd hectares of habitat were surveyed and turned up 1,400 or 1,600 koalas. So it is a labour-intensive exercise. Once you go out to the really low-density populations, other methodologies are more appropriate.

Where you do need consistency, though, is in a particular area, like the mulga lands. If you are looking at time A and then at time B, you obviously need to use the same methodology at both times if you are going to compare them, which is what those folks have done, and that is what is showing up this drastic decline in the mulga lands. Using different techniques—but the same technique each time—in the denser populations, we are also seeing similar declines.

Senator CAMERON: This is my last question. Mr Brian Stewart from the Urban Development Institute of Australia (Queensland) said that the debate on koalas was substantially affected by emotional or other issues and that this could lead to problems dealing with it. Have you got a view on how you balance emotion with the scientific facts?

Prof. Carrick: I have never been persuaded that emotion—assuming that what you mean by 'emotion' is commitment to and empathy with something—means you have to be irrational. I think it is perfectly possible to treat scientific facts objectively, but you ought to be concerned about it if you have empathy with what you are seeking to protect. I think that is a bit of a put-down. I think that if there were huge amounts of emotion and no evidence then the Urban Development Institute might have a point, but it is a bit hard to say that this is all driven by emotion when there is abundant evidence that the koalas are getting hammered. So, yes, I do not think we should ever just react to a five-minute grab on TV or something—or five seconds would be more realistic—but I think there is abundant evidence and I think people are very seriously committed to trying to protect this international icon, and good luck to them.

Senator CAMERON: Thank you.

ACTING CHAIR: I will ask Senator McKenzie if she has any questions.

Senator McKENZIE: No, I do not, but I do thank Professor Carrick for his testimony today.

Senator DI NATALE: Thanks very much for your submission. I am interested in the fact that koalas have evolved with chlamydia and retrovirus over a number of years, possibly many thousands of years if not longer. I am reminded of my medical days. Some conditions, for example sickle-cell anaemia, obviously cause disease in some populations but also confer a survival advantage, for example protecting against malaria. Is there any evidence that chlamydia or retrovirus may confer some sort of survival advantage? Is there a hypothesis around what that might be and is that a possibility in your view?

Prof. Carrick: I think that is pretty unlikely. I think you raise an excellent point though. All of us have a huge amount of retroviral DNA. Thankfully it is all inactive. Some of us, like me, are old enough to probably have some monkey virus kicking around because we got the early Salk vaccines and they were not cleaned up all that well. Most of the kids who got that vaccine would have it. Fortunately it is benign.

ACTING CHAIR: This is unsettling the chair!

Prof. Carrick: Yes, you are of that age group too. I think the key thing is that with chlamydia it is a koala strain of chlamydia. It has almost certainly co-evolved with the species for a long, long time—that is, thousands if not millions of years. The retrovirus is interesting. In a way the concern about it follows the sorts of concerns about chlamydiosis that were expressed six years before retrovirus was worked out, which was in 1990—they will all be dead in 10 years unless we develop a vaccine. I think a vaccine may well be useful in captive koalas. It is difficult enough to deploy vaccines in people, where they want to get vaccinated and they will queue up at a medical facility to get vaccinated. To deploy this in a wild population is going to be a big ask. The other thing is: would you really want to do it? You would lose the ability to monitor which koalas are naturally infected and which have been successfully vaccinated. Again, they are not closed populations. If you actually successfully achieve vaccination, you are going to have to do it forever.

I also think it is quite clear that the role of chlamydia is as a secondary effect. It has been clearly demonstrated that chlamydia is the aetiological agent, the cause of the various chlamydial diseases in koalas. The situation is not that clear for retrovirus. I think it is a concern. Yes, in some captive populations in particular, there is an association between the presence of retrovirus and various leukaemia's, but you are seeing that cancers of all descriptions in koala populations in the wild are less than a 10th of the infectious disease problems in koalas. So even if retrovirus were causing them all, it would really be a minor issue. The other thing is: what are you going to do about it? I think when people look closely enough they are going to find that all koalas have the retrovirus and, to use a terrible term, it is endogenised—that is, it is spliced into their genome. What are you actually going to do about this? I think this is also a bit of an issue.

I am nervous that there will be a response that says, 'Fixing the habitat problems is going to be expensive.' I am not being churlish about it but the only Commonwealth contribution to this has been 43 hectares in south-east Queensland, which is very welcome but it is not going to fix up life for an awful lot of koalas. I think that cost the Commonwealth \$1.6 million—money well spent. However, it is superficially attractive to focus on disease and say, 'Disease is the problem. We'll fix that. We'll flick a couple of million bucks to develop a vaccine, and all will be well.' Apart from anything else, if you look at chlamydiae, for example, the World Health Organisation and National Institutes of Health in the United States have spent gazillions of dollars and several decades trying to develop a vaccine for trachoma and genital chlamydiosis in people. So far they have been spectacularly unsuccessful. Even though I think my Australian colleagues who are still active in chlamydial research are very skilled and capable, I reckon it is a bit ambitious to put all your eggs in the basket of developing a successful vaccine without even addressing the problem of whether you would want to deploy it, even if you had one. I am nervous that we are distracted, and the distractions are: (1) the Victorian and South Australian populations, which I think are a different issue and should be treated separately; and (2) diseases. Yes, they are a problem and need to be managed, but the key driver to the whole lot is continuing reduction of habitat and the isolation of that habitat. I think that is the key issue.

There are a whole series of things that would be very useful additions. I think there is a need for an Australian koala research institute—there isn't one—to focus research. I think it needs a physical presence and should be a hub using existing people who are already active. Don't try and invent the wheel; resource them better. I think we need long-term monitoring sites and more of them. I think we need a cost-effective mechanism to improve information transfer. A really good way of doing that is to give everybody publishing their koala papers the supplement that is necessary to get them published in open-access journals so that everybody can read them, not just people who happen to be members of a university and can get it through the library. Paradoxically, online journals have made information less accessible, not more accessible. The University of Queensland Library, for example, was a public library so anybody could go in, take a journal off the shelf, photocopy it and they were away. Not anymore: you go in there and, unless you have got a password and user name, you cannot get access to the online journals. I think that would be a useful thing for information transfer.

What we need is more data, not more modelling using inadequate data, and that is what resources are going into: modelling using crappy data, literally. The old adage of rubbish in, rubbish out applies to models as much as anything else. If the committee would indulge me, there is an interesting quote about modelling from some folks involved in the use of modelling in epidemiological studies, which is probably the most advanced use of mathematical modelling in biological processes. They say:

Sensibly used, mathematical models are no more and no less than tools for thinking about things in a precise way.

They then concede that:

Excessive use of symbolism or formal methods of analysis can confuse as opposed to clarify and it must be admitted that some sections of the mathematical epidemiological literature have drifted from their original moorings and sail free from the constraints of data or relevance.

I would respectfully suggest that when people use DFOs—which is not where you buy cheap consumer goods; in mathematical modelling literature, it stands for data-free observation, which means that if you want to test the model and you do not have any data, you just make some up and see how it goes—it is good for looking at models but it is not so good when you are using inadequate data or you are ignoring data and making guesstimates about something. That is the basis of what is currently happening I think is some genuine value from modelling but what we need is more data, not more models. But I come back to: all those are useful additional things but the key thing is to try and put some sort of delay into further habitat loss. That is what I think the key role of listing under the EPBC Act will achieve.

ACTING CHAIR: To round up on that, you told the committee at the start that 80 per cent of the mulga land's population of koalas had been lost since the start of the last decade. That is based on the impact of drought and the deaths of trees which are the habitat and feeding source of the koala. We have had evidence also of the depredation of dogs. There are large numbers of dogs in the same region, and that includes dingo crossbred dogs. Do you have any information on that that you can give to the committee? Do you know what impact, if any, the dogs have had on that declining population in the mulga lands?

Prof. Carrick: I have not worked in the mulga lands. We have worked a little bit further east. Wild dogs are certainly a serious predator of koalas. By and large, in those areas the koalas have learnt how to get by. Generally speaking there will be some predation. We have had some of our collared animals, when we have found them dead, obviously chewed up by a wild dog. But I think that where they have probably been really hammered very hard is with the vegetation, which is already so much sparser in the mulga lands. Koalas move between trees not in the canopy—I have never seen a koala cross from one tree to another in the canopy except if it has had a biologist chasing it—but by getting down on the ground. They walk past several trees to the next one. If they are in the mulga lands, they have a long way to walk between trees. They have slightly less distance to walk in Central Queensland. So, if you have an expansion of the wild dog population in the mulga lands, it is probably going to have even more impact than it has elsewhere.

However, whilst that certainly needs control and I would certainly support that, it is not the primary driver. What we are seeing is that, yes, we should try to halt that—and I certainly would not think that controlling those wild populations is not a good idea. But I think that those areas are just never going to have as many koalas as they had 20 years ago.

ACTING CHAIR: Lastly, following the Gunnedah experience, do you see any hope of replanting in Central Queensland—Central Queensland coming to the rescue of the declining population?

Prof. Carrick: Absolutely. We know that 'build it and they will come' actually works, because we have been monitoring what happens with mine site rehabilitation both in Central Queensland and on North Stradbroke Island. The rehabilitated mining areas now have koalas in them. I think that is precisely right. Gunnedah tells us two things. It tells us that, if you do restore habitat of the koala populations—they have problems with dogs, cars and disease in Gunnedah as well—the sum is positive. More koala babies get born and survive than get chomped by dogs, hit by cars or die from disease if we put the habitat back, as long as we do not push the population to unrecoverable levels where there are just not enough koalas to be able to respond.

I think it also is a very good illustration of the converse. If putting habitat back with a given set of threats increases the population, it is inexorably logical that, if you reduce the amount of habitat with the same given set of things, it is going to drive the population down, which is exactly what we are seeing.

ACTING CHAIR: Thank you very much. The committee thanks you for your submission and for your input into our inquiry.

Prof. Carrick: Thanks again to the committee for the opportunity.

AMIS, Mr Anthony, Land Use Researcher, Friends of the Earth

[09:49]

ACTING CHAIR: Thank you for coming today. The committee has received submissions as submissions 50 and 69, respectively. We ask if you want to make any alterations or amendments to those submissions.

Mr Amis: No alterations, but I have added some additional material which I have handed to Chris today. That includes an as-yet unpublished but soon-to-be published scientific report by Tristan Lee from the University of Sydney called *Genetic analysis reveals a distinct and highly diverse koala (Phascolarctos cinereus) population in South Gippsland, Victoria, Australia*. I have also included for the committee some observations from some wildlife shelters. One is from the Southern Ash Wildlife Shelter and another is from the Animal Clinic Morwell. They have observations about the differences between Strzelecki koalas and the translocated populations of koalas.

ACTING CHAIR: You have got three documents there?

Mr Amis: Three documents.

ACTING CHAIR: And you want to table one of those?

Mr Amis: I want to table all of them.

ACTING CHAIR: All of them?

Mr Amis: Yes.

ACTING CHAIR: Okay. It is important for you to know that they will then be published as part of the proceedings.

Mr Amis: The scientific report cannot be published until it is published by the academic journal in which it is going to be published.

ACTING CHAIR: That leaves two.

Mr Amis: I am happy for the other two to be published.

ACTING CHAIR: There being no objection, the committee is happy to accept those. Thank you, Mr Amis. You might like to make an opening statement before we go to questions.

Mr Amis: I would like to quote from the publication that is soon to be produced by the University of Sydney. It says: 'The South Gippsland population had higher genetic diversity than French Island and Mornington Peninsula animals. The level of genetic diversity found in the South Gippsland population is the highest reported in Victoria and is comparable to the highest levels of genetic diversity in any koala population reported so far in Australia.'

ACTING CHAIR: Can I just interrupt there, Mr Amis, to ask whether the South Gippsland population and the Strzelecki population are different or the same?

Mr Amis: In this study the South Gippsland and Strzelecki koalas are the same. This report follows on from a lot of work done in the nineties by Bronwyn Houlden. She also highlighted the fact that the Strzelecki-South Gippsland koala population has unique genetic attributes. In terms of management, although the Victorian state government has identified the South Gippsland population as a priority population for study, there are currently no management plans specific to koalas in the South Gippsland region. If logging in the Strzelecki Ranges causes further habitat fragmentation of the South Gippsland habitat, it may isolate koala populations and accelerate a genetic drift. It is essential that logging plans incorporate measures to maintain koala gene flow between populations in logging areas and that only minimal habitat is removed. Such measures need to include substantial migration corridors. Previous studies indicate that a variety of landscape features can present barriers to koala gene flow in the Sydney region and therefore that the corridors will need to take into account the presence of roads or housing and contain preferred koala habitat.

I also want to raise some observed problems with the translocated populations that have been found near wildlife shelters. Dr John Butler of the Animal Clinic Morwell has written that there was a very significant mortality rate from the fires on Black Saturday in February 2009. I think 20,000 hectares of Strzelecki forest was burnt. Since the fires we have seen a greater number of local koalas with stress related conditions. He has observed firsthand the effects of low genetic diversity on populations such as the Raymond Island, Leongatha and Sandy Point area koalas. He has also seen koalas with disease and health compromise resulting from translocation attempts and from reproduction control techniques used by the Victorian government departments. A major concern is that we are continually dealing with situations in which volunteers are trying to remedy this situation

with little help from outside sources. It appears that even government directed programs such as koala translocations and breeding control programs are of doubtful success as far as the future of a genetically diverse and robust population goes.

I want to now bring up some things from the Rawson publication. The Southern Ash Wildlife Shelter have observed numerous problems with the translocated populations. There have been reports of an eye disorder known as optic nerve coloboma, which affects normal nerve conduction. Vision can be disrupted and vision impairment can ensue. The Raymond Island populations appear to be suffering from chewing and absorption problems. The Melbourne Zoo's post mortems on two affected koalas has led them to change their thinking on this. They did think it was caused by a narrow lower mandible. But they now think that it could well be a tongue muscle that does not enable the koala to feed properly and thus large amounts of gum matter is drooled from both sides of the lower mouth rather than masticated and swallowed, leading to malnourishment, failure to thrive and fungal and bacterial infections.

Observations of Sandy Point koalas, where there was an estimated population of 2,000 in the 1980s but where there is no more than a handful today, has detected odd morphological differences and odd behavioural traits in comparison to the general population. Heads have been observed to be significantly rounder or flatter, with narrow mouths, smaller eye sockets—pin eyes—and limited muscle mass in the upper shoulders. The average condition score for these animals is two out of five. The odd behaviour includes clumsy and uncoordinated movement. The presentation is similar to Down syndrome but could simply be problems with bone growth instead. However, there has not been any research conducted into this population to ascertain the issue.

There are also big issues with hormone implants in translocated animals. We have found on post-mortem the uterus in a sterilised koala to be no more than shrivelled grey matter and this individual had a dependent, malnourished and dehydrated one kilogram to five kilogram back-carried young koala that it was not lactating for. It is imperative that any koala that is considered for sterilisation or translocation is given a full medical health assessment, including blood analysis, to ensure that viable and fit animals are being selected.

That is about all that I need to add. I would like to give my apologies for Susie Zent not appearing. She is our koala expert, but her father is very ill at the moment so she could not be present today.

ACTING CHAIR: Thank you. I hope it goes well for her. Could you tell the committee a bit more about translocation and how much of that is occurring in Victoria or elsewhere that you know about?

Mr Amis: I could not give exact numbers. But there were a handful of koalas moved to French Island in the 1890s. Every koala population throughout Victoria—apart from the South Gippsland Strzelecki population—has been sourced from those animals that were moved to French Island in the 1890s.

ACTING CHAIR: Where did they come from?

Mr Amis: Apparently, they came from South Gippsland. But you would need to talk to an expert on the history about that.

ACTING CHAIR: Is translocation still occurring?

Mr Amis: As far as I know, it is. But you would have to ask the environment department for the details on that.

ACTING CHAIR: Do you have any information for the committee about the numbers of South Gippsland koalas as distinct from the wider population?

Mr Amis: There has been no population survey at all. We have trying to raise funds to get some experts down to do the count, but we have been unsuccessful with that at the moment, so it is unknown.

ACTING CHAIR: You mentioned the bushfires. Has there been any assessment of the numbers of koalas that were eliminated by the bushfires?

Mr Amis: All we have heard are rumours. But we have heard rumours that potentially hundreds of koalas were killed. We also know that the animal shelters have taken in quite a few burnt animals. Some key areas in the northern Strzeleckis were burnt. Key koala breeding grounds were totally burnt out on that day in the Jeeralang Hills.

ACTING CHAIR: I think we might get evidence later about the logging in the Strzelecki Ranges region, which is largely, if I am not wrong, on private land. What is your information about the impact there? You talked about keeping corridors for the movement of animals when logging occurs. Can you give the committee any further information about that?

Mr Amis: We have been observing the logging practices down there since the mid-1990s. You have to understand that the history of the Strzelecki forest is that, up to about the mid-1990s, much of the area was classed

as native forest. There was an act of parliament in Victoria, the Victorian plantation corporations legislation, which altered the land tenure for a lot of the southern Strzeleckis and it was classed as plantation overnight. A lot of these forests were established in the sixties and seventies through a variety of techniques by the department of forestry at the time. All of a sudden, at the stroke of a pen, they were then classed as plantation. In 1998 those areas were bought out by Hancock Victorian Plantations. They were interested mainly in the mountain ash reforestation that had occurred. There were several contracts, as I understand it, which would feed into the Australian Paper pulp mill at Maryvale.

Since that time—I could be wrong on this—about 700 to 800 hectares of mountain ash a year has been logged. A large proportion of that is then replanted to shining gum. Mountain ash is a koala feed source. Shining gum is not. Even if you believe the statements that you will probably hear later in the day from Hancock that they do not log native forests, we have had a massive conversion in the area from koala feed to non-koala feed. The other thing you have to factor in is that a lot of the ash areas were established next to native forests and some natural seeding has occurred. Under the VPC act essentially anything grown within the plantation boundaries is regarded as plantation, whether it is native vegetation or not. Hancock do leave some trees here and there, but we have observed over the years that a lot of native trees, Indigenous forest other than ash, have been logged by the company, including prime koala feed trees.

ACTING CHAIR: Senator Cameron, do you have a question?

Senator CAMERON: No, I have no questions.

Senator McKENZIE: Anthony, you have obviously got quite a passion for this and have been looking at it for a long time. I was wondering why successive Victorian governments have not recognised the Strzelecki koala as a separate population.

Mr Amis: That is a good question. I have not really got the answer to that. I presume they thought that, because they were seeing supposed increases in populations through the translocation program, the koala population was increasing. But, as I have pointed out, there could be a lot of problems with the health issues of the translocated populations. The Strzelecki population was essentially—I will not say wiped out—basically given short shrift by successive Victorian governments. Effectively they privatised almost its entire habitat by the stroke of a pen in the nineties, so it is not something to be very proud of.

Senator McKENZIE: I have one more question for some clarification in terms of what Professor Carrick was saying earlier about the genetic diversity of the different koala populations and how Queensland and New South Wales are one batch and South Australia and Victoria are another. Yet, in your submission, you were saying that the Strzelecki population is one of the most diverse in Australia.

Mr Amis: Yes, in terms of the recent science and the work of Barbara Houlden it definitely is. We are calling for the Strzelecki South Gippsland population to be treated as a separate management unit, separate to the other populations in South Australia and Victoria. The South Australian populations were also the result of translocations from the French Island stock. So the Strzelecki one is vital to preserve its unique genetic attributes.

Senator McKENZIE: In your opinion, there would be three genetic groups of koala populations?

Mr Amis: I cannot comment on what is happening in New South Wales, particularly around the Eden area. I understand that there are some very important populations there. My work is focused only on what is happening in South Gippsland and the Strzelecki Ranges.

Senator DI NATALE: Thank you for your presentation. Can you tell me a bit about the 2008 Cores and Links agreement, struck between Hancock and the state government, which obviously was controversial at the time and whether it has provided adequate habitat and corridors for the koala population in that area?

Mr Amis: It is a very long story. In 2006 the state environment minister announced a new reserve in the Strzelecki Ranges, which would have protected key areas such as College Creek and the Jack River and other areas down there as well. That agreement was overturned. The major sticking point there was contract volumes. Hancock said they were under contract obligations to the Maryvale pulp mill and they needed to up the amount of native forest that may have to be logged if we had College Creek and some other areas set aside. That agreement fell through.

We had a new agreement set up by the CO of Hancock and the new conservation minister at the time, Gavin Jennings, which allowed for a clear-fell of about 1,500 hectares of ash in the Cores and Links region, including the logging of College Creek. There was also some native forest set aside which, arguably, Hancock were not going to touch anyway. But that was added as a no-go area, which was about 20,000 hectares. Of that, maybe half of that would be good koala habitat, but I cannot be sure. A lot of the area to be reserved includes drainage lines in pine plantations and other areas which are of high-conservation quality. There is some good stuff there but, by

and large, there would be a fair amount of bush in there that would not have a high conservation value. We had the double whammy in that we had the fires in 2009, which knocked out 20,000 hectares on the north face and, a week after the fires came through, we had logging commence in College Creek, which was observed to be full of koalas and to be of national significance for its conservation attributes.

The original Cores and Links agreement was designed to protect the Strzelecki cool temperate rainforest. That was its core conservation imperative. Unfortunately, we have an agreement, but they are allowed to log 1,500 of some of the most contentious areas which include areas in close proximity to rainforest.

ACTING CHAIR: Again, with respect to the differentiation between the Strzelecki and the South Gippsland koala population and the rest of the population which may have, in the 1890s, come from that population but been genetically confined to the individuals that went to French Island, can you tell the committee any more about what is known about genetic differences between the two populations?

Mr Amis: Only what is in those reports. As I said earlier, the Strzelecki-South Gippsland population, as it stands, is one of the most genetically diverse populations in Australia. Essentially, the translocated populations do not have that same level of diversity. In rough terms, you could say many were suffering from inbreeding. I guess you could say that the Strzelecki population is more robust, healthier and larger. You would need to talk to Suzie. She has done a lot more work on it than I have.

ACTING CHAIR: You mentioned logging on, I presume, the south side of the ranges, having been affected by the bushfires.

Mr Amis: The fires were mainly on the north and the logging was basically south and north.

ACTING CHAIR: Was that clear-fell or was it selective logging?

Mr Amis: It was clear-fell.

ACTING CHAIR: You have said there was a population of koalas in there. Has there been any monitoring of that population and have there been any results of the logging?

Mr Amis: There has been no monitoring, but since College Creek has been logged—it is an 800 hectare catchment and probably 360 hectares was logged—we have seen one koala down there in the last two years. I am not sure whether the koalas will move back there in time.

ACTING CHAIR: Was an assessment done of the number of koalas before the logging?

Mr Amis: No. We do not have any koala population numbers in the Strzeleckis whatsoever; it just has not been done.

ACTING CHAIR: It is really just anecdotal rather than scientific?

Mr Amis: That is right. We are lacking the science on the numbers. If you get a massive bushfire hit, and a large conversion of ash to *nitens*, it is not looking too good.

Senator CAMERON: The forestry industry, in response to some of the questions raised during the previous hearing, has responded by saying there are lots of benefits in terms of the forestry industry for koalas and wildlife populations. They put out a list of issues, and I would like you to comment on that. They say they undertake fire management and weed and pest management and that feral animals such as wild dogs and pigs are removed. They say they put strategic infrastructure in the forests such as roads, fire towers and water points and that ecological management is undertaken. They say this is actually a benefit above where we were previously when there was clear felling and agricultural land destroyed the habitat completely. Do you have a view on these positive aspects the forestry industry is drawing our attention to?

Mr Amis: The forestry industry employs public relations consultants and I would say a lot of it would be spin. I am sure there might be some positives that come with some of the activities that the forestry companies do, but what we have seen on the ground in the area where we look in the last 15 years has been extremely negative.

Senator CAMERON: They also say that where a wedge tailed eagle nest is discovered they have a 10-kilometre no felling policy. Would that be an option for koalas as well?

Mr Amis: That would be very nice!

Senator CAMERON: Would that be a 10-kilometre radius, or what?

Mr Amis: If koalas were sited near logging operations and there was a rule that no logging could occur within 10 kilometres of where that koala has been observed, I think our organisation would support that!

Senator CAMERON: Would that be practical in terms of ongoing business activities?

Mr Amis: Probably not. Part of the problem we have down there is the Maryvale pulp mill. They are taking hundreds of thousands of cubic metres out of the Strzeleckis each year, which they are buying from Hancock. Those supply contracts, and the privatisation of what was once state forest, are making our task extremely difficult. We would be lucky to get a 50-metre exclusion zone around a koala site, let alone a 10-kilometre exclusion zone.

Senator CAMERON: Do you think forestry and koalas can coexist?

Mr Amis: In a dream they probably could. I think that if you had minimal logging of areas—let us say you took out a couple of trees per hectare—it could potentially work. But the demands of the industry are to knock out entire catchment areas, and the scale of the industry does not allow for ecological concerns as far as our organisation is concerned. The scale of the industry is way too big; it does not have a soft touch.

Proceedings suspended from 10:15 to 10:37

GREENFIELD, Ms Julia, Environmental Ranger, Phillip Island Nature Parks

JESSOP, Dr Rosalind, Environment Manager, Phillip Island Nature Parks

REED, Mr Ashley, Senior Ranger, Phillip Island Nature Parks

HUNT, Ms Patricia, President, Friends of the Koalas, Phillip Island

ACTING CHAIR: I welcome representatives of Phillip Island Nature Parks and Friends of the Koalas, Phillip Island. Thank you for coming to talk with us today. The committee has received your submissions as submission Nos 80 and 47 respectively. Do you want to make any changes to those submissions?

Ms Greenfield: Yes. We have rewritten our submission for the listing of the koala under the EPBC Act. We did not feel that it was showing what we wanted to portray, so we have rewritten that.

ACTING CHAIR: Thank you. The committee will accept that resubmission.

Ms Hunt: I have brought something extra as well. I have brought a letter from the Phillip Island Conservation Society. There are six copies. That group has been in existence for 43 years. Our group was formed under the auspices of the conservation society in 1990. We were actually created to help because the koala numbers on Phillip Island were plummeting. They have proven just how quickly the koala population can fall on Phillip Island. This book is called *An Island Worth Conserving*, and it has a whole chapter on the history of Phillip Island koalas. The previous speaker was talking about all the koalas from French Island being translocated. There were a lot from Phillip Island translocated too, to large parts of Victoria apart from the Strzeleckis. The Strzeleckis basically was the only area where the koalas that are there have always been there. Most of the other populations in Victoria come from French Island and Phillip Island koalas.

ACTING CHAIR: Would you like to table a copy of that book?

Ms Hunt: Yes. It is there for you to read.

ACTING CHAIR: Thank you. As there are no objections, the committee accepts that.

Ms Hunt: I want to say, if it is allowable, that I think it is a bit regrettable that no wildlife carers were invited to speak today, as they are the ones at the front line and could probably give a more accurate picture of the huge problems that koalas face and the flaws of the current management practices. I was just a bit sad to see that there was not one wildlife person on the list today.

ACTING CHAIR: Thank you. At earlier hearings we have had wildlife carers before the committee, but, as ever, we are open to submissions from anyone who wishes to make one. I ask each of you if you wish to make a brief opening statement before the committee asks you about the information you have presented.

Ms Greenfield: We are here today to emphasise our belief that protection of the koalas' habitat and protection from introduced threats are the main problems and the best way to protect the koalas as a species. We have found this on Phillip Island. I work at the Koala Conservation Centre and, as the population of koalas continues to drop dramatically on Phillip Island outside of the Koala Conservation Centre due to the combined effects of loss of habitat, domestic dog attacks, road mortalities and diseases like chlamydia, largely due to the increase in human population and tourism on Phillip Island, the population inside the Koala Conservation Centre has remained steady.

The Koala Conservation Centre was established in 1991 and opened to the public in 1992 to protect the koala species and habitat and to provide a viewing opportunity for visitors. The Koala Conservation Centre is managed by Phillip Island Nature Parks, a Victorian crown land committee of management. It protects a small population of less than 40 individual koalas and their habitat behind a koala-proof fence, which prevents escapees and incomers. The trees along the perimeter are also managed to prevent movement of koalas. Although it is a small area of six hectares of koala habitat, we have proved that by looking after and managing their habitat and protecting them from introduced threats—dogs and cars cannot get into the Koala Conservation Centre—we can help to protect the species. We think that if conservation of habitat was done on a broader scale we could potentially protect the koala as a species.

Ms Hunt: Our group was formed because of the plummeting population of koalas on Phillip Island, and we really have not been terribly successful because Phillip Island has gone crazy with development and,

unfortunately, very few developers take wildlife into consideration—they might say they do, but they do not. That is why the numbers have plummeted. We still have a few hanging on around the place, but their habitat keep getting truncated and they cannot get from one place to another. That is why we spend most of our time now lobbying, and not greatly succeeding, to try to save the trees. It just shows you how quickly a population can plummet. They were translocating koalas from Phillip Island up to the end of the seventies because there were too many, and since the eighties they have been wiped out on the roads and they lose their habitat every time we have subdivisions. Now we only have 20 or so, if that, on the rest of the island and the numbers are decreasing. We do know that, when you have that sort of development, the disease chlamydia can make itself more greatly known and can actually kill them, whereas sometimes they can live with it if they are not stressed.

So there are very few koalas on Phillip Island now away from the Koala Conservation Centre, which is quite a tragedy. The same thing is starting to happen in other parts of Victoria and, of course, in New South Wales and Queensland. We say there are thousands of koalas still around and maybe they should not be regarded as endangered, but I think our counts are very poor and we are possibly assuming that there are more than there are. In areas where there are too many they are sort of in little islands and cannot escape. They are inbreeding. They can crash very quickly too. So we have some areas where there are too many but they are genetically poor. The ones that really are worth preserving are in the Strzelecki Ranges, where they are genetically so much better and they do not have any inbreeding problems. They are the ones whose numbers are now really plummeting I believe.

ACTING CHAIR: You say there are fewer than 40 koalas in the Phillip Island Nature Parks but it is in six hectares. It sounds like the population is steady, if not robust. Is there a worry, however, with the genetic make-up of that small population if you are preventing cross-fertilisation with koalas from outside?

Ms Greenfield: I suppose there potentially is. We do have breeding programs within the koala conservation centre. We can section koalas off. We have two close viewing boardwalks and off viewing areas, which is where we have our breeding koalas. We choose which koalas breed with which. I believe in the past we have brought in koalas from Gippsland to increase the genetic diversity in our population. We do an annual health check on all of our koalas and have not seen any of the problems that come up with inbreeding. We have not noticed any problems so far. We believe we have a healthy population.

ACTING CHAIR: You have all spoken about dogs and cars. Do you have any more direct evidence that dogs are a threat? Presumably you got the evidence that within your nature park there are no dogs. Is there any direct evidence about dogs affecting koalas on the rest of the island?

Ms Hunt: Yes, when we had more koalas we frequently had pet dogs attack and kill koalas, particularly if they made a mistake and got into a yard with a Doberman. Even if they are not killed outright, koalas have a terrible tendency to just give up. If they are mauled they can die of shock and stress. I know a few years back a mother and joey were mauled and killed. That was very sad because we do not have many joeys born in the wild. They were two average pet dogs.

ACTING CHAIR: So what happened there?

Ms Hunt: They just had it on the ground. Koalas travel quite a lot on the ground between trees. Dogs that want to chase anything that moves attacked it. They were rescued by people and taken to the vet, but they did not survive.

ACTING CHAIR: Is there any prohibition on dogs killing koalas?

Ms Hunt: Yes. It is often very hard to prove which dogs did it. I am not sure in that case. I know a lot of people who saw that case had a fair idea of where the dogs came from but it was never really proven. It is a bit difficult. It is up to the shire council of course if a dog does something like that. It does not happen much now because we have not got many koalas left, but I know it does in New South Wales and Queensland.

ACTING CHAIR: In the submission from the Phillip Island Nature Parks it says there were some 3,300 koalas sent back to the mainland with the last leaving in 1978. I presume that was not all in one go; it was over a period of time.

Ms Hunt: It was done sort of annually. I think they did it much later on French Island. French Island still has way too many koalas. They are now doing hormone implants and sterilisation on French Island. They are becoming rather inbred from what I have heard. They regularly took the koalas off Phillip Island for years because there were too many. They stopped doing that, as you say, in 1978, when they realised that the numbers were getting lower. After that, the numbers continued to fall. Our group was formed in an attempt to try and get people to be more aware of them on the roads. We fought battles like getting speed limits reduced and things like that in order to make people aware.

ACTING CHAIR: Was that successful?

Ms Hunt: Not really. It possibly saved a few koalas and made people aware of the fact that they were there but it did not really stop the carnage because, unfortunately, koalas have a terrible tendency to sort of walk across the road and stop halfway, and you cannot see them. They sort of blend in. So they are terribly vulnerable on the roads. We keep trying, and we might have made a bit of a difference but not a great deal.

ACTING CHAIR: Have you had actual evidence of koalas being hit by cars?

Ms Hunt: Yes, all the time. The nature park people will back me up on that, having been called out to pick up injured koalas with broken legs and all sorts of things. I think you would probably know more about that.

Ms Greenfield: Yes. I will quickly go back to the translocation program: it started in 1941 and continued until 1978. So that is just that information. We have data here for koala mortality and rehabilitation on Phillip Island; it is only between 1997 and 2006, when koala populations were still quite low on Phillip Island. Fifty per cent were from road trauma, and 50 per cent of the koalas that we rehabilitated were also from road trauma incidents. So it is a major threat to them on Phillip Island.

ACTING CHAIR: Do you know what that number is?

Ms Greenfield: Of the koalas that died, 36 were from road trauma out of a total of 86—so not quite 50 per cent. And then of those that were rehabilitated, there were four out of seven over that period.

ACTING CHAIR: That were rehabilitated.

Ms Greenfield: They survived and were released.

ACTING CHAIR: Out of the 36?

Ms Greenfield: No, out of seven. The other ones were found dead on the road.

Ms Hunt: As you got over the bridge at Phillip Island, we had a sign for many years which had on it the number of road kills. It had a running tally of how many were killed each year. There used to be up to 100 when there were a lot of koalas, and it gradually got down and down until it was suddenly realised that leaving the sign up saying, 'Only three koalas were killed' had people thinking that that was wonderful when it was coming out of a smaller number of koalas. The sign was not really any use then, and so it was taken down. It was there until the nineties.

ACTING CHAIR: But there was a stage in which more than 100 koalas were killed in a year?

Ms Hunt: I would say yes. I have not got the figures with me but I have them at home, and they show you how many were killed each year. There were a lot. They used to have this sign up 'Koala road toll this year' just to make people aware. But, as I said, it became quite silly when there were only two koala deaths and, of course, the number of koalas had plummeted by then and so it did not really mean anything.

ACTING CHAIR: Have you got any further evidence for the committee about the difference between the South Gippsland or Strzelecki koala and the Phillip Island or French Island stock?

Ms Greenfield: No.

Ms Hunt: All I know is that recent studies done at the university in New South Wales prove that they were a separate species genetically and that, therefore, they were extremely important for the future of the whole of the koala population and that the Strzelecki koalas should be preserved, otherwise they are going to go down fast.

ACTING CHAIR: Is there a study or a record kept of where the translocated koalas went to? Do you know?

Ms Greenfield: Not that I know of, no.

Ms Hunt: The state department, the DSE, may have those records, because they were the ones who were involved in the translocation.

ACTING CHAIR: Thank you.

Senator CAMERON: I notice that in the submission from Phillip Island Nature Parks your contention is that the koala is not as a species endangered but that some populations are in serious decline. Given that contention, do you believe that the act should be able to differentiate between different populations of koalas and take steps to protect koalas where they are in serious decline?

ACTING CHAIR: I might be able to help you here, Senator. I will just read the extra statement from the Phillip Island Nature Parks. It is quite short. Then Ms Greenfield might like to add to it. It is an amendment to the listing of the koala under the EPBC and says:

It is our contention that the koala is not as a species endangered but that some populations are in serious decline and may be heading towards localised extinction, including the introduced population on Phillip Island. Other populations such as

French Island, Raymond Island and other island populations have had rapid population growth and have resulted in differing management issues. We believe that each koala population needs to be assessed individually and action taken accordingly. Listing the koala under the EPBC Act could potentially make it difficult to manage either one of these situations and it would be very difficult to enforce the act. Very careful consideration needs to be taken before any decision is made.

Do you want to add to that, Ms Greenfield?

Ms Greenfield: I do not think we really want to add to that. I do not think we are classified as an expert to know enough about the act to determine whether or not they should be listed. We know that different populations do have different problems and they need to be managed differently. What we are a little bit worried about is whether or not within the act the two very different management options for those populations can be managed properly for all koala populations and one is not going to create problems for one population.

Senator CAMERON: Also the submission I have before me says that there is no opinion expressed on the national koala conservation and management strategy. Is that because you do not have an opinion or you just do not want to express your opinion?

Ms Greenfield: I did not write the submission, the senior ranger did, and he has been on holiday for the last five weeks so I have not had a chance to speak to him about his submission. I am not sure why he did not have an opinion on that.

Senator CAMERON: Could I put it to you that if we increased the capacity of the conservation and management strategy, that could have beneficial effects on the Phillip Island koala population. Would that be a reasonable proposition, do you think?

Dr Jessop: I think you have to remember that the Phillip Island population is not a natural population. Koalas were taken there in the 1890s for their preservation, really. All those problems I guess that French Island and Raymond Island have with managing their population Phillip Island has had in the past. It is difficult. You just need to manage each population as the needs arise.

Senator McKENZIE: The six hectares with 40 koalas, is that at capacity, and if so what you do with the extras? Do you release them back onto Phillip Island or do you take them off the island and put them somewhere else?

Dr Jessop: At the moment, Victorian legislation requires that you cannot release koalas into the wild, so they have to stay within the situation, so within a captive population—that new legislation came in last year. At the moment, the number of deaths and births has balanced, so we have not had a problem but we will have to form further relationships with other zoos to manage that in the future.

Ms Hunt: I am a bit surprised that you are calling yourself a zoo. Our group wanted and hoped that, when they did reach a level where they had too many, they might be able to release a few back into the reserves on the island, which are now capable of holding a few koalas. Unfortunately, that does not seem to be going to happen. I would also like to say that, as far as whether they should be classified higher on the EPBC Act, I think they need to be for the species as a whole and that those areas, where we do have too many koalas with a different management problem, come under a different category. I still can see that those areas where there are too many are going to possibly have a crash before too long because I do not think it is really working at the moment with the way in which they are trying to control them with sterilisation. There are a lot of problems with that and, as that earlier South Gippsland gentleman said, there are lots of problems with translocated koalas. I think that, as a species, they need to be higher up the scale because I think we are living in a fool's paradise at the moment thinking that we have got too many. I do not think it is going to be like that for very much longer if we continue the way we are. At least, if the species as a whole had a bit more protection, we might be able to do something to help those populations that are genetically valuable.

ACTING CHAIR: Is there an assessment of what the population on Phillip Island was when it was at its peak?

Ms Hunt: There were lots. They were everywhere. They were in everyone's houses, and you would walk down the main street and see koalas in the trees. We just regarded them as part of the furniture until all of a sudden they started to disappear.

ACTING CHAIR: Dr Jessop, you just mentioned about it now being not legal to release them into the wild. Is that a law against translocation?

Dr Jessop: No. We have a display licence from the Victorian government to display them within an area where they are held and under that licence you are not allowed to release them into the wild.

ACTING CHAIR: Under the display licence.

Dr Jessop: Under the display licence from the state government, you are not allowed to release them back into the wild.

Senator DI NATALE: Thank you, Ms Hunt and Ms Greenfield, for the submission. Did you say there were approximately 20—you will not have accurate information on this—left that are not in the conservation centre?

Ms Hunt: It is pretty hard to know. We used to do annual koala counts on the island. We used to have the phone-in survey and then we would walk through the reserves and ask people to phone in. We have not done that for quite a number of years and I cannot remember: I think they have got the figure there from the last survey that we did but we have not done one for a few years. That is just an estimate. People ring us up and tell us when they see a koala, and we put it in our newsletters but we do not have very many calls. We have probably had about half a dozen this year so that was just my estimate. It is very low.

Senator DI NATALE: Of that magnitude. Do you think that there is any future for koalas outside of the conservation centre on Phillip Island?

Ms Hunt: I would like to hope so, but it does not look very cheerful at the moment. I still think that we could have a few more, for example, in the large Oswin Roberts Reserve on the island, which is quite a big piece of land. There is Ventnor Koala Reserve as well. I think it could happen but I do not think it will because I do not think the nature park want it to or can allow it to as they just said. I do not think it is going to happen. I do not think a future for the free-ranging koalas on Phillip Island is there and I have a feeling that it is going to happen in other places like Sandy Point in Gippsland and several other places. Of course there are still some hanging on on the Mornington Peninsula and they were being relocated for a while as well from around Cerberus; places like that. They were eating themselves out of house and home because they were at the end of the peninsula and, as soon as they moved out, they were straight into suburbia and they hit problems. I do not think they will be around for much longer either.

Senator McKENZIE: Just on this amendment to your section (e), where you mention the difficulties of listing the koala under the EPBC Act, how do you feel about it being listed? I am not sure how it is listed from a state perspective.

Dr Jessop: It is not listed.

Senator McKENZIE: Yes, that is what I thought. So do you have the same concerns about it being listed from a state perspective as you do from a Commonwealth legislative perspective?

Dr Jessop: I do not think it would meet the criteria to be state listed.

Senator McKENZIE: Why?

Dr Jessop: Because there are so many. As far as we know—though the population figures are not very robust—the population in Victoria is steady.

Senator McKENZIE: But, with your recommendation that you look at the different populations individually and their own management issues and their numbers, we are hearing that the Strzelecki population is under stress, so they may warrant listing under state legislation using the individual approach that you are recommending here.

Dr Jessop: I do not really know enough about the state legislation to comment.

Senator McKENZIE: That is okay. Thank you.

ACTING CHAIR: Thank you all very much.

SEWELL, Miss Linda, Chief Executive Officer, Hancock Victorian Plantations

[11:06]

ACTING CHAIR: I now welcome Miss Linda Sewell from Hancock Victorian Plantations. Thank you for coming to talk with us today yourself. I note that Hancock Victorian Plantations did not make a written submission, but I will ask you if you have anything you would like to submit and if you would like to make an opening statement for us.

Miss Sewell: Thank you, I would like to make an opening statement if I may. HVP Plantations is acutely aware of the iconic status of the koala, and we acknowledge our responsibility to help protect the species. It is an important responsibility and one of many that HVP Plantations and its people assume. It is important to me that it is clear what HVP Plantations is and what it does. As the name suggests, HVP Plantations is a plantation company. We are part of Victoria's rural community. We manage a land base of over 245,000 hectares across the state of Victoria. Most of this estate is plantation, and most of this estate is radiata pine, an exotic softwood species that is used commercially around the world. We do not harvest native forest, and this has been the case and our company policy since HVP Plantations was founded in 1998. Further, we strengthened that position in Gippsland by agreeing with the Victorian government in 2007 to permanently protect over 20,000 hectares of native forest.

We manage our working forest alongside the native forest, and the collective estate provides a habitat for a rich array of animal species, including the koala. So our harvesting practices need to be cognisant of this environment. HVP Plantations is a good steward of these lands. We were the first company to achieve Forest Stewardship Council, or FSC, certification in Australia. We were also the first to achieve dual certification under two internationally recognised forest certification standards: FSC and the Australian Forestry Standard.

Today presents an opportunity to reiterate our approach to the koala. It is a proactive approach. In formal terms it comprises five elements: monitoring, operating standards, research, recovery and enhancement. There are a range of initiatives within each of these five elements that have been detailed to the commission previously. We have spent years mapping our estate, and this knowledge has enabled us to identify prime koala habitat, which, together with expert guidance, allows us to manage our operations accordingly. Our research program includes a partnership with Monash University to improve knowledge of the health and genetic diversity of the koala population. We train our field staff and contractors on the company's operating standards for the management and protection of koalas. On the ground, we are working with local groups on a number of cooperative projects that enhance the quality of the koala habitat. That work takes place on both HVP land and on adjacent land. As I said at the start, HVP is a good steward of these lands. That has been the case for more than 13 years, and it will be the case in the years ahead. Thank you.

Senator CAMERON: One submitter has argued that the koala population cannot survive with a logging industry. What is your view on that?

Miss Sewell: I would say that it already does. We have an extensive estate, which is both plantation and native forest, and the native forest is permanently protected. So I believe they can work side by side.

Senator CAMERON: Is that just an opinion, or is there some evidence from your operations that you could submit to the committee?

Miss Sewell: I guess the evidence is that we do not harvest native forest, and therefore a large part of our estate is permanently protected and is habitat for the koala.

Senator CAMERON: And does the koala roam across your plantations?

Miss Sewell: Yes, it does. We have a rich array of native forests and plantations within our estate, which creates a level of corridors for the koalas to move through.

Senator CAMERON: Can you point to the density between native and planted forests?

Miss Sewell: Sorry, I do not understand the question.

Senator CAMERON: Do the koalas only reside in the native area?

Miss Sewell: No, the koalas also use the plantation as a food source and move through it to the native forest.

Senator CAMERON: Are there any demographics in relation to where the koalas are vis-a-vis native and planted forests?

Miss Sewell: We have done maps to determine where the prime koala habitat is; it is just a part of our more general maps. We have been working with Monash University, for example, to try and undertake a research program to help identify numbers and population health.

Senator CAMERON: When you say you are working with Monash University to try and do that, what is the status of that research project?

Miss Sewell: It is still in the formulation phase.

Senator CAMERON: Do you expect it to come to fruition?

Miss Sewell: We would like to think so. With many of these things it takes a while to get the funding and the scoping of the work established.

Senator CAMERON: When you say you are working with Monash, it gives the impression that something is happening. But you are saying it has not come about yet. Is that correct?

Miss Sewell: We are working with them to scope up the exercise.

Senator CAMERON: What impediments would there be, other than funding, to get this exercise up and running? Wouldn't the industry fund this?

Miss Sewell: The initiative is being led by Monash University, so I guess I am not qualified to answer the question as to what the impediments are for getting it across the line.

Senator CAMERON: If they are looking to you for funding, it would be an impediment if you do not give them funding.

Miss Sewell: I do not think they are necessarily looking just to us for funding, and I do not think funding is the only impediment. I think determining the scope of the research work is also still in play.

Senator CAMERON: And you are working actively with them on the scope of the research work?

Miss Sewell: We are supporting them in determining the appropriate scope, yes. But it is primarily their research work. We can only support it, we cannot necessarily lead and direct.

Senator CAMERON: Why not? Why can't you say that, as the industry, you have certain priorities you would like them to look at, and then get either their agreement or disagreement on that?

Miss Sewell: We are certainly trying to provide support to them, but primarily it is a research program and we are not qualified as research scientists. We can support them but, ultimately, we cannot lead the exercise. It is not our background.

Senator CAMERON: So you would rely on them for advice?

Miss Sewell: I guess they are the experts when it comes to science.

Senator CAMERON: I suppose there is also the anecdotal evidence that you look at. On your website I noticed that you make a significant issue about your environmental sustainability and your stewardship. Surely you have someone there, if you say that you have got a stewardship policy, who looks after the koala population.

Miss Sewell: We have people on staff who are focused on looking after the stewardship of our lands, which cover an enormous array of fauna and flora, of which the koala is one. We do not have a designated koala expert, per se, but we have people on our team who are very much focused on protecting the flora and fauna within our estate.

Senator CAMERON: How many people are employed doing that?

Miss Sewell: We have about 100 people on staff.

Senator CAMERON: On environmental issues?

Miss Sewell: No. We have half a dozen working specifically on environmental issues and obviously the rest of our staff, as operators, have a level of training in environmental matters.

Senator CAMERON: Could you take this on notice: could you provide details of the qualifications and the numbers of people that you have employed doing environmental work?

Miss Sewell: Yes, I can provide that on notice.

Senator CAMERON: Could you also provide details of their expertise and knowledge of koalas. I know you said that they were not experts, but they may have some understanding.

Miss Sewell: Yes, I can do that on notice.

Senator CAMERON: Thank you.

Senator DI NATALE: For clarification about the nature of the plantations, are they mainly *nitens*?

Miss Sewell: The bulk of our plantations are radiata pine.

Senator DI NATALE: Of the hardwood plantations?

Miss Sewell: About 10 per cent of our estate is hardwood plantations, and that is a mixture of *regnans*, *nitens* and blue gum.

Senator DI NATALE: And the proportion of each?

Miss Sewell: I could not answer that question specifically.

Senator DI NATALE: But the predominant species is *nitens*?

Miss Sewell: The predominant species is the *nitens*.

Senator DI NATALE: Which is not a food source for koalas—is that correct?

Miss Sewell: I am not qualified to answer that question, but I do not believe it has been confirmed either way.

ACTING CHAIR: You said that Hancock does not harvest native forests, of which there is about 20,000 hectares.

Miss Sewell: There are 20,000 hectares in the Strzelecki Ranges.

ACTING CHAIR: How big is the holding of Hancock in the Strzelecki Ranges?

Miss Sewell: It is about 65,000 hectares.

ACTING CHAIR: So there are 45,000 hectares of plantation, roughly speaking. But you said that 10 per cent of the 250,000 hectares was plantation, which is about 25,000, so where is the disparity?

Miss Sewell: The 40,000 hectares of plantations in the Strzelecki Ranges of course include radiata pine. Our predominant species is radiata pine.

ACTING CHAIR: So there are some 25,000 hectares of radiata pine in the Strzelecki Ranges?

Miss Sewell: There would be 25,000 to 30,000 hectares.

ACTING CHAIR: We are looking at some 20,000 hectares of native forests which are protected and some 20,000 hectares of native species plantations which are not protected.

Miss Sewell: That is correct—on our estate.

ACTING CHAIR: Yes. You said that these are plantations. What is a plantation? What is the difference between that and a native forest?

Miss Sewell: I think there is plenty of evidence to show that these were specifically planted for commercial purposes. In fact, a reasonable proportion of the estate was acquired from Australian Paper who planted it specifically for their use.

ACTING CHAIR: Were they planted by hand or was it via seed dispersal or were trees left to disperse? Can you tell the committee about the origin of those plantations?

Miss Sewell: It was before my time. I am sorry.

ACTING CHAIR: Probably not mine though!

Miss Sewell: I believe they were planted by hand, but I could not answer that question.

ACTING CHAIR: Could you take that question on notice?

Miss Sewell: I can take that question on notice.

ACTING CHAIR: Some of these plantations date from the 1930s. Some are *Eucalyptus regnans*. Are those plantations monocultures or multicultures? Is there a diversity of native species growing back where there once was native forest before it was logged or cleared?

Miss Sewell: Where we define it as a plantation it is a plantation, so it was planted primarily on degraded farmland. Where there is a diverse range of species it is typically a native forest and therefore that is permanently protected.

ACTING CHAIR: So the plantation areas are all the result of recovering previously cleared agricultural land?

Miss Sewell: Yes.

ACTING CHAIR: You talked about these providing corridors between native forest areas. Are those corridors protected?

Miss Sewell: If it is a plantation, it is not protected. If it is a plantation, it is available for commercial use. However, we know that the koalas do travel through our plantations and that our plantations are interspersed through the Strzelecki Ranges with the native forest, so they complement the native forest.

ACTING CHAIR: But what happens when they get logged?

Miss Sewell: We have developed a koala operating standard, which dictates our planning and operations around the areas that are viewed as being koala habitat. For example, we go in and have a look immediately prior to the logging to determine whether there are koalas in that plantation at that particular time. If there are, we withdraw from that area until such time as they have passed through it.

ACTING CHAIR: Is it established that these plantations involving native species are not koala habitat?

Miss Sewell: A number of our eucalypt plantations are a feed source for koalas, but not necessarily prime habitat.

ACTING CHAIR: Do the koalas reproduce there?

Miss Sewell: I cannot answer that question. I believe they travel through the plantation. I am not sure beyond that.

ACTING CHAIR: You do not know if they breed in there?

Miss Sewell: I cannot answer that question.

ACTING CHAIR: Do you think Monash could answer that question?

Miss Sewell: I guess so. I cannot answer that question.

ACTING CHAIR: The koalas travel through these native species plantations and feed there. Are you sure that whenever koalas occupy those plantation areas they become non-logging areas for Hancock?

Miss Sewell: We have an operating standard which requires us to determine that koalas are not present in that particular harvesting coupe at the time that the harvesting is undertaken.

ACTING CHAIR: How is that assessment done?

Miss Sewell: Visually.

ACTING CHAIR: So somebody goes through the whole area?

Miss Sewell: They go through the area. If we have commenced harvesting and we do come across a koala then we will leave a tree or trees behind. We will either withdraw from the area and then come back or we will leave trees behind.

ACTING CHAIR: Let's go back to the visual assessment of an area that is a coupe to be logged. Is the whole of that coupe looked at before logging operations are undertaken?

Miss Sewell: As part of the planning operation that coupe would be walked and then inspected visually as they commence the harvesting of that coupe. If koalas are found, again, the harvesting will be temporarily withdrawn until such time as the koalas can move through the area.

ACTING CHAIR: The harvesting is withdrawn until they move through the area?

Miss Sewell: Yes, until they have moved off the area that is being harvested.

ACTING CHAIR: Let me go back to my original question. Is the whole of the area to be logged assessed for a koala presence visually—and I presume that means for pellets as well—before a logging operation is undertaken or is the area to be logged the next day visually looked at?

Miss Sewell: I am not sure I understand the distinction.

ACTING CHAIR: It will take some weeks to log a coupe.

Miss Sewell: I see. As part of our planning, we will determine whether there are koalas in the harvesting area, in which case we will make a decision to move to a different area. But, once we have started, then of course, yes, you are correct, it does take some time to harvest through that. If a koala is identified once the harvesting has started, we will move the harvesting area to a different area to allow the koalas to move through.

ACTING CHAIR: Has there ever been a coupe in Hancock's domain where koalas have been found that has not been logged subsequently after logging operations began?

Miss Sewell: Can you ask that question again?

ACTING CHAIR: Logging operations are begun and koalas are found to be in the coupe, so the logging operations are stopped. Has that ever led to a permanent stop of logging of a coupe, or is the coupe always eventually logged once it is found that koalas have moved away?

Miss Sewell: Some of those trees within that coupe may be permanently left behind, even though they are plantation trees, but not necessarily the coupe itself.

ACTING CHAIR: Do logging operations tend to move koalas away? I mean the sound of chainsaws and bulldozers and so on, which are essential to a logging operation.

Miss Sewell: I am not sure. I do know that they move through. Whether that is driven by their natural movement or not I am not sure.

ACTING CHAIR: Has there been any evidence that logging attracts koalas?

Miss Sewell: Not to my knowledge.

ACTING CHAIR: Do you know if Monash is looking at whether the disturbance of logging operations in a forest affects koalas staying in the vicinity?

Miss Sewell: I believe their prime focus is the health and genetic make-up of the population.

ACTING CHAIR: Not the impact of—

Miss Sewell: I am not sure about the specifics of that.

ACTING CHAIR: Could you find that out for the committee?

Miss Sewell: I can find out to the extent that Monash is happy for me to provide that information.

ACTING CHAIR: Thank you. You said that they are mapping the prime koala habitat. Could the committee have access to the maps that have been an outcome of that study?

Miss Sewell: We can provide maps in confidence. Obviously a lot of our maps have a lot of commercial information on them as well, so we can provide those maps in confidence.

ACTING CHAIR: Could you provide maps that relate to the presence of koalas without the commercial considerations that may need to be kept in confidence?

Miss Sewell: Certainly, removing the commercial considerations, yes.

ACTING CHAIR: Thank you. I would be very pleased if you could do that. You said that Hancock is interested in enhancing the quality of koala habitat. How is it doing that?

Miss Sewell: We are working with a number of local groups to try and do a number of things like the wildlife corridors, for example, but we also have things like biodiversity plots. We have been putting in biodiversity plots for the last four or five years, which are permanent plots to have a look at the biodiversity of that region, including the koala, which we will then come back to over time.

ACTING CHAIR: Does that enhance the koala population?

Miss Sewell: Hopefully it enhances the knowledge about the koala population.

ACTING CHAIR: You just mentioned wildlife corridors. Are these permanent?

Miss Sewell: If it is on native forest, it certainly is.

ACTING CHAIR: And if it is in native plantation?

Miss Sewell: It depends. If it is in a plantation where it is a buffer then, yes, it is. But if it is a plantation per se then no.

ACTING CHAIR: Are you able to tell the committee which wildlife corridors are permanent and which are not?

Miss Sewell: If it is a buffer around certain elements then it is permanent.

ACTING CHAIR: But I am interested in the wildlife corridors which are going to enable koalas to move from one habitat to another. You have given evidence that the native species plantations are not protected and that, if koalas are found in them, you wait until the koalas move out before you continue logging. I just wonder if the koala wildlife corridors that you are speaking about include such areas of native plantation.

Miss Sewell: Where there are buffers they certainly are. I can provide information on notice as to the extent of those.

ACTING CHAIR: And where there are not buffers?

Miss Sewell: It is plantation.

ACTING CHAIR: So the corridor can be logged under those circumstances?

Miss Sewell: If it is a plantation it can be logged, yes.

ACTING CHAIR: You mentioned FSC certification. Does that prevent logging of koala habitat?

Miss Sewell: It forces us to comply to our company policy of not harvesting native forest which is prime koala habitat.

ACTING CHAIR: But it does not prevent harvesting of native forest plantation?

Miss Sewell: We are entitled to harvest plantation. Yes, we are.

ACTING CHAIR: Which may—

Miss Sewell: Which may be a species that the koala feed on.

ACTING CHAIR: Or live in, because we are not sure whether they live there or not.

Miss Sewell: That is correct. We have an operating standard which we have with regard to that, and the FSC would determine that we are meeting those standards.

ACTING CHAIR: Who checks on that?

Miss Sewell: The FSC have certifiers—auditors.

ACTING CHAIR: Have Hancock been in conversation with the FSC or the AFC, the Australian forestry certification people, about koala habitat?

Miss Sewell: We have a koala operating standard and the auditors confirm that we are complying with our policies and standards.

ACTING CHAIR: Could you provide the committee with that koala operating standard?

Miss Sewell: Yes, we can do that in confidence. Again, it is not in a form for the public domain because it is part of our suite of operating standards, but certainly we can provide it in confidence.

ACTING CHAIR: Can you provide it on the public record? I do not think that is a commercial-in-confidence matter, is it?

Miss Sewell: It is not in the form of that, but we can put it in a form for that.

ACTING CHAIR: Would you do that?

Miss Sewell: I certainly can do that.

Senator CAMERON: Mr Malcolm Tonkin, the general manager of the company, wrote to the committee secretary on 24 February 2011 and he outlined in that correspondence a number of points and describes them as initiatives. The initiative that we looked at that is there is this research project with Monash University exploring the genetics of the Strzelecki koala and developing a koala census technique with Monash University. Is that still caught up in the discussions you are having with Monash or is that a separate proposition?

Miss Sewell: No, that is the program that we were talking about earlier with Monash University. It does include what we were hoping to do as having a census count.

Senator CAMERON: Given that you wrote in February that this was an initiative and you have said, 'We are doing a research project and we are doing the census,' why would you have that in there if it is actually not being delivered?

Miss Sewell: We have started to endeavour to do that census work but, as you can appreciate, it takes some time to determine how you are going to go about it. That is not entirely within our control of course because—again I emphasise—it is a Monash led project. We have one of our staff working closely with Monash on that.

Senator CAMERON: What about Peter Menkhorst? Is he working with them on this on your behalf?

Miss Sewell: No, he is not working on our behalf.

Senator CAMERON: Why would your expert consultant not work with Monash on this? I am interested in why that would not be happening.

Miss Sewell: We do not employ Peter. He works independently. One of our staff has been working directly with Monash.

Senator CAMERON: I thought Mr Menkhorst was your expert consultant.

Miss Sewell: No.

Senator CAMERON: You actually say that he is an expert on koalas.

Miss Sewell: We have a range of people that we work with with regard to the koala. Peter, for example, has helped provide training to our operators through a koala training course.

Senator CAMERON: Can we have copies of that koala training course as an example of what the industry is doing?

Miss Sewell: In terms of course documentation? Yes, we can provide that.

Senator CAMERON: When you say 'documentation', is that the actual training and what is done?

Miss Sewell: We can provide a summary of what that training involves.

Senator CAMERON: I am not looking for a summary. I am actually looking for the training as you undertake it. You have probably got outlines of your courses and detailed courses and what the outcomes are.

Miss Sewell: Yes. I refer to it as a summary. Of course part of the training is actually out in the field. I guess my point is that I would have to summarise what is done out in the field.

Senator CAMERON: Mr Menkhorst goes out into the field with your staff, does he?

Miss Sewell: We have a number of people providing training for that. Peter is one of them.

Senator CAMERON: It says that he conducts the training.

Miss Sewell: He contributes to the training course along with a range of other presenters.

Senator CAMERON: Can you provide details of that? The correspondence, I must say, is quite misleading. I am not saying you have done that deliberately, but you do say that the research project with Monash is there, that you are developing the census—the research project is not happening—and that Peter Menkhorst and Colleen Wood are conducting your training. I would like some details of that. Can you provide those details?

Miss Sewell: Yes, we can.

Senator CAMERON: Also, I had a look at your koala brochure on your website. Are you familiar with that?

Miss Sewell: Yes, I am.

Senator CAMERON: The last page talks about working to protect the koala and there are 11 dot points. Could you take this on notice: could you advise us how each of those dot points individually and collectively is working to protect the koala as you say they are doing?

Miss Sewell: I can certainly take that on notice.

ACTING CHAIR: Finally, Miss Sewell, it is interesting that Monash University is doing this, and I will put it to the committee that we approach them to get what information they may have. I might also ask you if you would approach Monash to ensure that that information is available. Particularly it is interesting, because of the evidence we have had about the Strzelecki population and its genetic make-up, to get information about that and this developing process for protecting the Strzelecki koala population.

Miss Sewell: Certainly.

ACTING CHAIR: Thank you very much.

Senator CAMERON: I have just one more question on notice. Could the company provide the details of the qualifications and experience of Mr Menkhorst?

Miss Sewell: I would have thought it would be appropriate to ask that of Peter directly. Would you like me to ask Peter to provide that information?

Senator CAMERON: One way or the other. It does not matter as long as I get the information.

Miss Sewell: Certainly.

ACTING CHAIR: Thank you, Miss Sewell.

SOMERSET, Dr Bronte Jean, Private capacity

[11:39]

ACTING CHAIR: Welcome. Thank you for coming to talk with us today. The committee has received your submission, which it has numbered 96. Do you wish to make any amendments or alterations to that submission?

Dr Somerset: Yes, I do. I intimated in my submission that there had been some anecdotal evidence regarding the mistreatment of koalas. I have subsequently received some more anecdotal evidence to support that claim and I would like to provide an explanation as to the significance of those claims. All of these claims are based on anecdotal evidence, so I cannot claim that they are correct. The evidence I received initially was that, prior to logging, some koalas had been shot. Because that was such a ghastly statement, I thought I would make some inquiries as to whether anyone had heard of other cases of mistreatment, and I did find some anecdotal evidence which might support it.

In Yurammie State Forest a logging crew found the carcass of a koala which had been shot. They took it to their supervisor, who decided that the koala had fallen from a tree onto a stick. A few years ago several koala carcasses were found in a quarry in Tantawangalo. Tagged koalas later found dead were assessed as having fallen out of a tree. In 1977, koalas were found in Nadgee State Forest. In 1980 a 20-tonne post-logging bark dump was built. It ignited in November and burnt 46,000 hectares in six hours, releasing huge amounts of energy. In 1986, environmental impact statements were called for. One resident asked whether the koalas had survived the 1980 fire. Her question was translated in the report as: 'Did the koalas survive the 1952 fire?'

These individual anecdotes may be tenuous. However, it was stated that residents soon twigged as to what was happening. As a body of knowledge, it at least raises suspicion; at most, it is sickening. To me, it makes little difference whether the koalas were intentionally destroyed by random acts or whether logging processes destroyed them, their colonies and their habitats. The results are the same.

ACTING CHAIR: We will now go to your submission. Would you like to speak to that?

Dr Somerset: With regard to the evidence of a lack of consultation which I mentioned in my submission, there is one more addition I would like to make. I inquired further into that. In my submission, I noted that Forests NSW appears not to have undertaken the legally required consultation with certain groups prior to logging. To me, the constitutional definition of consultation goes beyond just an advice letter. They are required to consult with several groups which I name hereunder. Janine Green, president of the animal welfare group WIRES, confirms that WIRES has not been consulted with regard to logging that is currently being undertaken in areas around Bermagui and in the Five Forests area in the far south-east of New South Wales. Suzanne Foulkes, from the conservation and environment group Friends of Five Forests, based in Bermagui, confirms that there was no consultation from Forests NSW regarding either its 2009 or 2011 logging campaigns in the Bermagui State Forest. Five Forests is well known to Forests NSW. Two members of the Gulaga and Biamanga board of management told me that neither the traditional owners nor other board members had been consulted.

Rather than depend on hearsay as to whether residents had been consulted, on 16 July I conducted a door-to-door survey of all the people whose residences abut the Bermagui State Forest. I found only one person who said they had been consulted, and almost 100 per cent said they opposed the logging. Some had not received a letter of advice. I would like to add this clarifying information to my submission. Today I would like to make some comments regarding what is happening on the ground and the reality of what we are experiencing in my area. I present as a private citizen. I do not have any other benefit or impetus for submitting or speaking today. I just represent the view of many of my friends and the residents who live in the area of the five forests. I would like to talk about that reality, about activism and about the experience of a resident in Bermagui and I would also like to make some recommendations to this inquiry as to how it might proceed.

My submission to this inquiry was confined to Bermagui and to the state forests of south-east New South Wales because it is where I live. I am sickened by the treatment of our forests and consequent habitat destruction, including for the koala, by clear-felling and native forest logging. We live on an island but we cannot use this as an excuse to absolve ourselves from global criticism. The world is watching, just as we watch what happens in other countries. After I posted some images of a local logged forest on Facebook, my cousin in North Carolina commented, 'Bronte, wow! I thought that perhaps only us Yanks had perfected the art of denuding forest. This is criminal and I'm sorry to see that this is occurring.'

This is such a global threat. Many more people are paying attention these days. Tourists do not want to see denuded forests; they want to experience the lush, beautiful natural forest that we value intrinsically. We need to

recognise that and work towards protecting their beauty and securing their unique carbon storage and habitat capacity. This might save the few remaining koalas, especially considering the rarity of the genotype in this area. We can no longer blindly accept the status quo of chipping approximately 90 per cent of Australia's logged native forest timber and selling it overseas. Over 2,500 trees enter the Eden woodchip mill each working day. To me, the woodchip pile there represents native species' habitats, forest larders and forest homes, lying in a huge dump on the ground as a commodity to be sold—our native forests of beauty, rich and rare, pulverised.

I thought you may like to know a little about what is happening in Bermagui at present. The residents of Bermagui and Tanja recently received letters notifying them of timber harvesting and acknowledging that the forests to be logged contain koalas. Compartment 2069, near Gulaga, contains koalas and logging is imminent. A map is in my submission, showing the proximity of the known koala population to the logging. They do not have a 10-kilometre buffer, either.

As stated in submission No. 61, the continuation of intensive logging activities on state forest lands in this area poses the single greatest threat to the survival of this particular population of koalas. So Bermagui residents are hopping out of bed early every Monday morning and lining up peacefully, dressed in black, on the tourist drive and the main road into Bermagui and witnessing the logging. There is supposed to be a visual impact zone, but it is not fooling anybody. We know what is happening and the destruction is awesome.

What the public sees, feels and smells after intensive logging is disturbing. To me, the woodchipping industry defies logic because, according to the Garnaut report, the financial benefit does not outweigh the natural worth of a forest. We feel deep grief, which finds no comfort in the phrase 'They'll be right again in 30 years or so.' One of the workmen on a Bermagui compartment was heard to say that he doubted these trees would regrow. They have been logged too many times. Regarding activism, 24 of the 25 conservationists charged with offences relating to protecting Mumbulla Estate forest from logging of known koala habitat have had their cases dismissed. It creates an anomaly when Australians are charged for trying to protect our natural wilderness and after examining the issues judges dismiss their cases. Thus friction is created, as the edges of nature, politics, science, the law, the timber industry and activism collided and grind against each other like tectonic plates. I see the collateral damage of these ongoing collisions on the back of logging trucks going down the Princes Highway.

ACTING CHAIR: Dr Somerset, do you have much longer to go on this submission? We will need some time for questions as well.

Dr Somerset: Sure. I just want to relate to you Julie's experience. Julie lives within 50 metres of where logging is taking place. On her regular walks through the forest beside her home next to compartment 2001, Julie has seen bird life, including lyre birds, sea eagles, swift parrots, owls, wedge tailed eagles; and animals, including a kangaroo with a joey, echidnas, yellow-bellied gliders, turtles, a monitor lizard and a little microbat, which she took to NANA. She practices the principles of sound environmental stewardship as she picks up rubbish in the forest and stays on the track so as not to damage creatures lurking beneath leaf litter. Heavy machinery is destroying this forest. The creatures cannot go to the forest over the road because they could get run over and it has been logged. There are no hiding places.

I do have more to say, but I will wait to see if you have some questions on what I have said.

ACTING CHAIR: Thank you. We will need to make sure that you have time to tell us what else you have to say.

Senator CAMERON: For the record, I would like to indicate that I wrote to the chief executive officer, Mr Nick Roberts, of Forests New South Wales in relation to this specific issue of the logging in known koala habitats in the Eden area. I did get a response and I will forward a copy of that to the committee for our consideration, because we may want to talk to Forests New South Wales. Dr Somerset, has there been any response to the issues that you have raised with the company in the Bermagui?

Dr Somerset: I have not contacted the company on this issue. We have contacted them on various issues in the past. But they quote the regional forestry agreements, which is the law under which they are entitled to log. However, we have a legal person in our conservation movement in the Far South Coast who has itemised logging breaches pertaining to koalas and inadequate surveys. I have copies of all of the letters that she has presented to the Department of Environment, Heritage and the Arts and Department of Environment, Climate Change and Water.

Senator CAMERON: The koalas in the Bermagui forest are some of the last of a special group, aren't they?

Dr Somerset: Yes. They belong to the special genotype that was mentioned by Dr Alistair Melzer in his evidence. Whether there are any koalas in the Bermagui forest or not I do not know. They have been photographed there as recently as 2009. I do not know where they are still in the Bermagui forest. But Forests

New South Wales indicated in their letters to residents that there were koalas there so no doubt they have done the surveys. But there are definitely koalas in compartment 2069, which is due for logging.

Senator CAMERON: Right. From any of the arguments that have been put forward by the forestry industry, do you think that their ecological management of the forest benefits the koala population?

Dr Somerset: I would not have any personal experience of that or any scientific evidence of that, but I do not believe that it does. It is tragic what we see, and I cannot imagine anything being able to survive in the forests after they have logged them.

Senator CAMERON: Has Forests New South Wales attempted to consult or discuss these issues with the local activists in the Bermagui area?

Dr Somerset: In this present spate of logging around the Bermagui area, I know of no such case where they have consulted. I have a letter from the WIRES group stating that they have not been consulted regarding either this current spate of logging or the previous spate in 2009. I have that letter to submit as well.

Senator CAMERON: How do you respond to some of the submissions that have been made to this committee that some of the submissions are substantially affected by emotional issues as distinct from scientific issues?

Dr Somerset: I must admit it is personally distressing to see what is happening. I think you do not need a scientist to tell you it is devastating when we see our forests logged. Yes, people do get emotional about what is happening, but it does not take away from the fact that many people have submitted to this inquiry that the habitat destruction is one of the major causes of koala decline in numbers.

Senator CAMERON: Thank you.

Senator McKENZIE: For a point of clarification for my own understanding of the issue, is this state forest native plantation being logged?

Dr Somerset: No, it is natural native forest. They are not plantations.

Senator McKENZIE: Thank you.

ACTING CHAIR: We have Forests New South Wales appearing later in the day. You have said that residents have received letters noting that it is koala habitat that is intended to be logged. How is that stated in those letters?

Dr Somerset: I have copies of the letter here.

ACTING CHAIR: Would you like to table a copy of that letter as well as your earlier opening statement?

Dr Somerset: Yes. I have tabled that. It says: 'I am writing to inform you that Forests New South Wales are planning forest activities in Tanja State Forest. There are known koala records on various tenures around this area. Forests New South Wales seeks any additional information you have on koala activity in the area that you believe may be of interest.' The letter to Bermagui says: 'Database searches show that koalas have been detected around the area. If you have any additional information'—and this led me to ask: why did they want additional information about koalas in the area? If they have done their surveys, they will know what is there and what is not there.

ACTING CHAIR: We will potentially be able to ask that. You have a second letter there. Do you wish to table it?

Dr Somerset: Which letter was that? I have tabled both of the letters from Forests New South Wales, one to Bermagui and one to Tanja. They are in the appendix.

ACTING CHAIR: Would you care to table your opening statement that you have written?

Dr Somerset: Yes. You are receiving that now.

ACTING CHAIR: I just want to go back to the allegations about the shooting of koalas. Have you got any more tangible evidence on that?

Dr Somerset: That is purely anecdotal evidence. It was told to me by a lady. I said to her, 'Why would Forests New South Wales want to know where koalas were if they had done their surveys correctly?' She has been in the area for a long time. She said, 'That is so they can destroy them before logging.'

ACTING CHAIR: But there is no evidence of that.

Dr Somerset: No, I have no evidence of that.

ACTING CHAIR: We may be able to ask them about that as well.

Dr Somerset: I found that surprising myself, but after investigating and asking some older citizens in the area I discovered those stories that I have previously mentioned.

ACTING CHAIR: Have you got any information that might help us about the number of koalas in the Bermagui region?

Dr Somerset: There are people with much broader knowledge of that. Yes, I can take that on notice and provide you with that information.

ACTING CHAIR: We have had some evidence that it is 50 or less, but it is not very clear. Again, we can ask other experts later in the day about that.

Dr Somerset: Certainly.

ACTING CHAIR: Thank you very much, Dr Somerset.

Proceedings suspended from 12:01 to 13:38

GREAR, Mr Brenton, Director, Natural and Cultural Resources, Department of Environment and Natural Resources

MENKHORST, Mr Peter, Department of Sustainability and Environment

ACTING CHAIR: I welcome representatives from the South Australian Department of the Environment and Natural Resources and the Victorian Department of Sustainability and Environment. Thank you for coming. As departmental officers you will not be asked to give opinions on matters of policy; however, this does not preclude questions asking for explanations of policy or factual questions about when and how policies were adopted. The committee has received the South Australian government's submission as submission No. 77 and we have now received the submission from the state of Victoria. It does not yet have a number, but it will be given one.

Mr Grear: We do not have any amendments or additions to the submission that we made.

Mr Menkhorst: We do not have any amendments to the submission of the Department of Sustainability and Environment in Victoria. I apologise for its lateness. I learned literally 10 minutes ago that I had approval to sit here.

ACTING CHAIR: We thank you for coming at such short notice. I will ask you first, Mr Grear, if would you like to make a brief opening statement.

Mr Grear: Yes, I would. Firstly I would like to thank the senators and the Australian government for this opportunity to address the inquiry. The South Australian government recognises the koala's national status as an Australian icon species and that key subpopulations of koalas in New South Wales and Queensland are declining in number. However, in South Australia, koalas are, for the most part, an introduced species. They are considered abundant, and in some areas their numbers are steadily increasing. Whilst the South Australian government is supportive of measures being made to protect the species on a national level, any considerations given to listing koalas under the EPBC Act must take into account the need to actively manage overabundant populations of koalas, where they occur, in order to minimise the negative impacts these populations may have on broader ecological communities and on the welfare of the koalas themselves. In South Australia the koala is protected under the National Parks and Wild Life Act 1972. That allows for the protection of habitat and wildlife. However, as a reflection of increasing populations, the koala was delisted as 'rare' under this act in 2008.

As stated in the department's submission to this inquiry, prior to European settlement, koalas were only found in the south-east of the state and were believed to have become locally extinct by about 1920, due to hunting. Between 1920 and 1970, koalas, most likely of Victorian provenance, were introduced to a number of areas in South Australia, including Kangaroo Island, the Adelaide Hills, the Eyre Peninsula and the Riverland. Due to their origin, the level of genetic variation in South Australian koala populations is significantly lower than that found in other states.

The KI Koala Management Program was initiated in 1997, and that was to conserve riparian ecosystems through reducing the overabundant koala densities to more sustainable levels. The program has successfully reduced koala numbers on the island. The population of koalas on Kangaroo Island has dropped from an estimated 27,000 in 2001 to 13,000 in 2010. Also, in the last five years, there have been thousands of trees planted, particularly in the riverine areas, to replace those that were lost through koala overbrowsing.

In the Mount Lofty Ranges, there has been an increase in the number of sightings of koalas, and they are frequently seen in trees and elsewhere around suburban Adelaide. The South Australian government encourages a 'living with wildlife' approach to managing impacts caused by, and to promote positive attitudes to, koalas. So, in response to the growing number of koalas living in and around urban areas, we have developed a new koala intervention policy framework just recently. This policy guides the actions which may be taken to intervene when koalas are posing a safety hazard to members of the public, are in dangerous situations or show clear signs of sickness or injury. As a result of this policy, for the first time in South Australia suitably qualified and experienced wildlife rehabilitators are assisting in the recovery, rehabilitation and release of sick, injured or orphaned koalas across the state.

Finally, the government is developing a state-wide koala management strategy, and this aims to conserve and manage sustainable populations of koalas throughout their natural and their introduced ranges. We expect to have the strategy completed by June 2013.

ACTING CHAIR: Thank you. Mr Menkhorst, do you want to make a statement?

Mr Menkhorst: Firstly I would like to table this submission on behalf of the Victorian government.

ACTING CHAIR: Thank you. Your submission is accepted.

Mr Menkhorst: I will briefly summarise some points in the submission under each of the terms of reference of the inquiry. First of all, the iconic status of the koala. The koala has achieved iconic status as a very recognisable and well-known Australian faunal species. However, the relevance of that to conservation attention the species should receive is questionable. Victorian government policy is to focus conservation attention and resources where they are likely to achieve the best conservation benefit. This includes a greater focus on understanding the ecological processes that sustain species and ecosystems and working to minimise loss of biodiversity as a whole while also maximising the functionality of ecosystems. The implication of that policy stance for the koala is to emphasise management of overbrowsing to protect vegetation communities and their associated animal communities from damage.

We have talked a bit about the history of koala management in Victoria. It is unique and has been quite well documented. I will table a couple of documents, if I may, that detail that history.

ACTING CHAIR: Those two documents you want the table are on the history?

Mr Menkhorst: One is on the history and the other one is the Victorian koala policy. The conservation status of the koala in Victoria is largely a result of the management history which has continued since the 1920s. This needs to be clearly understood when assessing priorities for koala management in this state. Koalas are widespread in lowland and foothill forests across southern, central and north-east Victoria where the annual rainfall exceeds about 500 millimetres. Population densities vary enormously with habitat quality. In some areas population densities are unsustainably high and serious ecological degradation is caused by koalas overbrowsing their preferred food tree species. The ecological consequences of that can include the temporary or permanent loss or degradation of local flora and fauna communities.

High density but small populations on French Island, Raymond Island and Tower Hill State Game Reserve are now being controlled by very intensive and expensive programs of mass contraception using modified human contraceptive implants adapted for the koala through research conducted by DSE and Parks Victoria. The efficacy of this approach in the control of large-scale overbrowsing such as that occurring at Mount Eccles National Park and in the Otway Ranges is not yet clear but would require very high levels of resourcing. At Mount Eccles National Park there are more than 10,000 koalas. I do not have the latest figures for the number of female koalas that have been contracepted but it is several thousand and the population is declining slowly. But it has taken a massive effort and huge amount of resources and we are not certain that those resources will continue to be available.

In contrast, koalas persist at low densities of less than one animal per hectare in drier inland habitats, for example in box ironbark forests across central Victoria, and at intermediate and sustainable densities in numerous other forested areas such as the Strathbogie Plateau, the lower Glenelg River region, the Bendigo-Ballarat region and in south Gippsland. So although we hear about a lot of small populations that are declining, they are almost all small and isolated in suboptimal or degraded habitat, often periurban situations where you would really probably not expect viable populations of koalas to persist.

The important point I want to make is that there are extensive areas of habitat in the state's forests and woodlands, in national parks and state forests, where much larger and much more stable populations of koalas persist. Although we do not have a population estimate for those populations—we do not attempt to monitor them; it is not practical—the information that we have, which is derived from monitoring records from a whole range of sources, including departmental wildlife research and monitoring, and records from field naturalist groups, suggests to us that koalas are persisting in these broad, forested and woodland areas.

One point I would like to make is that, in the report from the Threatened Species Scientific Committee on the National Koala Abundance Workshop, an estimate was given indicating a Victorian koala population of 73,500. It is important to note that that figure was not meant to be an estimate of the total number of koalas in Victoria; it was the sum of the estimated number of koalas in the few, small areas where koalas are counted. I am emphasising that we know that there are koala populations across far larger and more extensive areas within Victoria. So the total number in Victoria would be much higher than 73,000, but I do not know how much higher. Those are the key points I wanted to make to begin with. Thank you.

ACTING CHAIR: Mr Grear, you have described the koala in South Australia as an introduced species after the elimination in the 1920s. Where did those koalas come from?

Mr Grear: The koalas that were introduced—

ACTING CHAIR: Yes.

Mr Grear: Mainly Victoria and, in particular, I think French Island. Most of the koalas resident on Kangaroo Island in the Adelaide Hills come from that source, except the lower south-east population, which is comprised of translocations from Kangaroo Island, plus a very small population that could have been migrations across westwards from Victoria and potentially a small relic population, although that is uncertain.

ACTING CHAIR: It has been interesting for us to hear about the genetic paucity of the koala population across much of Victoria and South Australia, but do you have any evidence of enrichment of that post the 1920s population beyond the French Island-Phillip Island stock?

Mr Grear: Very little. There were some re-introductions to the Riverland and I think a very small population exists in the Paringa paddock. That may have come from a different source. It is a very self-contained—

ACTING CHAIR: Do you know which source?

Mr Grear: I think from Queensland, but I can get information on that.

ACTING CHAIR: If you would.

Mr Grear: I can, yes.

ACTING CHAIR: Thank you. You said that there have been more sightings in the Mount Lofty Ranges. Does that equate to more koalas or to more people looking for koalas?

Mr Grear: It is probably a bit of both. Survey work has been undertaken across the Mount Lofty Ranges, particularly in the Adelaide Hills area. There are pockets where the density of koalas is two to four koalas per hectare. So there is no doubt that numbers are increasing from what was a zero base, because they are not native to the Adelaide Hills.

ACTING CHAIR: Do you know if that is the case historically, that they were never there?

Mr Grear: All of the evidence in the literature suggests that the only place in South Australia they were native to was the south-east. But with respect to the Adelaide Hills, perhaps due to the paucity of the quality of habitat, an expanding population is moving not only beyond ideal habitat into suboptimal habitat but also into a periurban development right across the outskirts of Adelaide and through the Adelaide Hills.

ACTING CHAIR: You said that you had to deal with the danger of koalas to the public. What was that?

Mr Grear: I have personal experience as someone who lives in the Adelaide Hills. Koalas spend quite a bit of time on the ground and the public often approach them in their backyards and so on. There is a danger in any wildlife-human interaction. There are reports of dog-koala interactions and traffic interactions as well—the obvious thing: people swerving in residential streets to miss koalas in the middle of the road.

ACTING CHAIR: Which makes the koalas dangerous to the people?

Mr Grear: It is not necessarily dangerous to the people, but an incident can result in danger to the people.

ACTING CHAIR: I get that, thank you. Mr Menkhorst, I was just going to ask you about the ecological damage and degradation in Victoria from the koalas. How widespread is that?

Mr Menkhorst: It isn't terribly widespread. It has occurred at about 12 locations in the state, all of them coastal locations. Four of them are islands and others are patches of habitat on the mainland. It is occurring in increasingly large patches of habitat such as Mount Eccles National Park, which is about 10,000 hectares, and more recently still in the Otway Ranges, where there are signs of very disturbing widespread defoliation due to koalas.

ACTING CHAIR: Why didn't they do this before?

Mr Menkhorst: I think they did. There are historic photographs published in that document I gave to you taken on Wilsons Promontory in 1905 at the time Wilsons Promontory was being declared a national park. It was pretty much a wilderness and the naturalists who went there and fought for that area to become a national park described koala overbrowsing. They recognised it was such a problem that they actually culled the koalas. So I am starting to wonder if in fact it has not always been a characteristic of southern koalas. In certain environments, usually associated with coastal manna gum, a subspecies of the more widespread manna gum, there seems to be this boom-bust cycle. Perhaps it is natural.

ACTING CHAIR: Like you get with kangaroos?

Mr Menkhorst: Yes, but when there is a serious drought female kangaroos will stop cycling and they will cease breeding. Koalas do not do that; they keep on breeding until they are literally starving.

ACTING CHAIR: Both you and Mr Grear have talked about small peri-urban areas where the populations are disappearing. Is that due to the expansion of human occupation or is it some other factor that is causing those populations to disappear?

Mr Menkhorst: We do not know exactly, but I think that it is a pretty reasonable assumption that the effects of stress, habitat loss, reduction in the number of trees, habitat degradation, dogs and vehicle collisions all combine to cause populations to become unsustainable.

ACTING CHAIR: This is not covered by the government submission, but has there been any economic valuation of the koala made in Victoria that you are aware of?

Mr Menkhorst: No, not specifically in Victoria. I am aware of the Australia-wide research that was published a few years ago. I cannot think of the authors' names right now.

ACTING CHAIR: The figure of 73,500 applied to some areas where there has been a population count, but there has been no census or general count of the numbers in Victoria or an estimate made that is available.

Mr Menkhorst: No. There have been estimates of some areas of Victoria, not by the Victorian government.

ACTING CHAIR: We had evidence before lunch from Hancock about the koalas in the Strzelecki region. I wonder about the government's monitoring of that area. We have had quite a lot of evidence about it being genetically important as a potential resource for the future of the koala. There is some monitoring from Monash University, our witness from Hancock told us, but what government assessment is there of the state of the Strzelecki region koala?

Mr Menkhorst: There has been no specific attention to determining population size in the Strzeleckis.

ACTING CHAIR: We heard that logging of plantation or regrowth native forests where koalas live or pass through proceeds only after the koalas have vacated the area. Has the government done any assessment of the potential of that population of Strzelecki koalas due to that logging activity?

Mr Menkhorst: Not to my knowledge.

ACTING CHAIR: Would that be something that could be assessed?

Mr Menkhorst: Certainly. It is part of the proposed research that was referred to, which Monash University, Hancock and others including DSE developed. That research proposal was an Australian Research Council linkage grant, and it failed to get funding. So that is part of the problem. Some of the earlier questioning was around why that has not moved forward. We are now in a situation where we are looking for other sources of funds to implement that.

ACTING CHAIR: You mean the Monash research?

Mr Menkhorst: Yes.

ACTING CHAIR: So is it proceeding at the moment or is it unfunded?

Mr Menkhorst: It is unfunded.

ACTING CHAIR: So it is not proceeding?

Mr Menkhorst: The refining of the research proposal is proceeding but, as I understand it—I am probably speaking out of turn here—the application to the Australian Research Council failed. As far as I am aware, there has not been an alternative source of funding.

ACTING CHAIR: So the research presumably awaits that funding. Can you tell the committee about the Victorian government's assessment of the importance of the Strzelecki koala population to the future of the koalas overall?

Mr Menkhorst: Victoria's koala management strategy, which I have tabled, clearly acknowledges the higher genetic diversity of the Strzelecki Ranges—well, in South Gippsland generally; we think it is more widespread than just the Strzelecki Ranges. That is part of the research proposal that I was speaking of. It is to try to determine the true extent of those genetic more diverse individuals. However, it is very hard for me to understand just how important that extra genetically diversity is. Genetic theory says that those animals should be able to adapt to environmental change better, perhaps resist disease better and so on, so it is a desirable thing. At the same time, the other, supposedly inbred Victorian koalas have very high population growth rates—in some areas at least. So there does not seem to be evidence of genetic problems occurring yet, but they may well occur in the future.

ACTING CHAIR: Do you subscribe to the theory that they would be more vulnerable—that is, the wider population compared to the Strzelecki range population—to some future disease or pandemic?

Mr Menkhorst: Yes.

ACTING CHAIR: I am interested in the South Gippsland or Strzelecki koala population. Can you tell the committee what research is underway at the moment into the genetic make-up, viability and range of that particular population?

Mr Menkhorst: The only research currently underway that I am aware of is that of Tristan Lee from the University of New South Wales. That is looking at the genetic make-up of that population.

ACTING CHAIR: Do you know how far that study has proceeded, what stage it is at?

Mr Menkhorst: No. The Victorian department has had surprisingly little interaction with Mr Lee, but one of the presenters this morning apparently has a draft paper that is being submitted, so we will be very keen to see that when it is published.

ACTING CHAIR: What research is the Department of Sustainability and Environment doing?

Mr Menkhorst: None.

ACTING CHAIR: What is the status of the koala in Victoria?

Mr Menkhorst: Its official status is that it is protected wildlife, as are all native vertebrates except fish. That is all. It is not listed as a threatened species under the Flora and Fauna Guarantee Act. But it has not been nominated for listing, so it has not been assessed.

ACTING CHAIR: Could the department nominate it if it wished to?

Mr Menkhorst: The department can, but the department chooses not to do nominations itself. Any member of the public or any group can nominate it.

ACTING CHAIR: So it has not been considered for nomination in Victoria. Finally—I must give my fellow senators a chance here—can you give the committee any information about the difference between the northern koala population and the southern koala population, whether you think they are subspecies or there is a difference?

Mr Menkhorst: I think Professor Carrick summarised that situation very well this morning. I do not think I have anything to add. I am kind of attracted to his suggestion of considering there to be two taxa, two forms, at some level and treating those as different management units. I think that makes a lot of sense.

ACTING CHAIR: I should have asked you, because of the relevance to Victoria, whether you have any information on that isolate of koalas around Bermagui in south-east New South Wales and what relationship that has to the Victorian population.

Mr Menkhorst: No, I do not have any information, but I would add that I am not convinced it is an isolate. There are koalas in far eastern Victoria, around Mallacoota, and north of the Victorian-New South Wales border, in the vicinity of Delegate, so it would seem to me that there is very likely to be a continuous population through that area—very sparse.

ACTING CHAIR: Do you think logging would have an impact on that population?

Mr Menkhorst: Almost certainly.

ACTING CHAIR: Thank you. Senator McKenzie?

Senator McKENZIE: Thank you, Senator Brown. You have crossed off a few of my questions. I appreciate that. Mr Grear, we have heard of two prolific koala populations, one on Kangaroo Island and one not far from my hometown of Mount Eccles. There are different management strategies with both. Could you expand on South Australia's approach to see if there are any mainland lessons we can learn from what you have done over there.

Mr Grear: The Kangaroo Island Koala Management Program started proper in 1997, when there was a population estimate of around 27,000 on the island. It was not per se the abundance of koalas that was causing the concern; it was the impact they were having on the habitat that was of concern. There was quite a long public consultation period around this because, as we have said here, they are an iconic species. It was decided to commence a program of sterilisation and translocation. That has been occurring since that time in 1997, with the intention of obtaining an average koala density on the island of 0.75 koalas per hectare. That program has continued, although there were no translocations in 2010-11. In 2006 there were around 16,000 koalas on the island, at various densities, and now there are around 13½ thousand on the island, at various densities. That has been backed up with an ecological restoration program on the island as well, particularly in the riverine habitat that was really suffering—the good quality manna gum habitat. So there has been a lot of community involvement on Kangaroo Island in replanting and so on.

ACTING CHAIR: Thank you.

Senator DI NATALE: Mr Menkhorst, I am interested in the Otway population, firstly, which is not surprising given it is not far from where I live. While it is obvious that there is overbrowsing going on, to my untrained eye there appear to be coastal manna gums not far from where the koala population is that seem to be unaffected and do not seem to be of interest to the neighbouring koalas. Is there something that keeps them within a particular range? Is it just the palatability of what is around or does something keep them confined to a particular area?

Mr Menkhorst: We do not really know. I think it is largely determined by palatability of individual trees, not only tree species but actual individual trees. Some particular trees perhaps have lower levels of the toxins that are present in eucalyptus leaves and are more palatable, and those trees are hammered by the koalas until there is not a single leaf left on them, as you have probably noticed. That is one of the mysteries.

Senator DI NATALE: You have also mentioned in your submission that you believe that climate change poses a real potential threat to the koala population in Victoria. Could you elaborate on that?

Mr Menkhorst: There is reason to think that the koala is perhaps particularly susceptible to increasing aridity and higher temperatures, and the wildfires which will probably come with those. Koalas mostly do not drink, although they will do so when they are very water stressed. They rely on getting their water from leaf moisture. If trees are under water stress, presumably they have a lower water content in their leaves and therefore koalas may not be able to derive adequate amounts of water, and that will cause all sorts of physiological problems for the koala, obviously. I am concerned that the predictions for Victoria are for increasing dryness and higher temperatures and that that will cause a contraction in the area of suitable habitat for the koala over time.

Senator DI NATALE: In that context, one would imagine that genetic variability would be critical in a future where climate change will impact on some of the habitats we have described and you would expect the genetic variability would be very important.

Mr Menkhorst: I am not sure about very important, but it would be desirable. I do not know the extent to which a bit extra diversity is going to allow individuals to be less susceptible to dying of thirst, but it certainly cannot do any harm.

Senator DI NATALE: Okay. Given that the koalas in south Gippsland express most of that diversity, you mentioned it is an issue where koalas and timber harvesting coexist. What sort of issue is it? Just describe for me why it is an issue?

Mr Menkhorst: Clear-fell logging results in the death of animals that were depending on those trees that were taken away. Individual animals might be able to move into adjacent unlogged forests, but one should assume that that adjacent forest is already occupied by that species. The immigrant animals usually do not fare well. What you are doing is forcing more animals into less habitat, which simply does not work. Those immigrant animals are likely to suffer a lingering death. So clear-felling reduces the area of habitat, so that is going to reduce the total population. But that habitat is regenerated under a logging regime, so at some point in the future the regenerating habitat will become suitable for koalas and koalas will reinvade that area and live in it until it is logged again. So the impact is not as dramatic as clearing vegetation for agriculture, for example, where it is cleared permanently.

We know from many examples, and Professor Carrick talked about one this morning, where koalas will occupy newly created habitats. The fact that the koalas occur in the plantations in the Strzeleckis, for example, shows they are quite adaptable and they will occupy habitat that regrows or is re-created. In theory it is quite possible to have a logging regime and koalas as well. But you will have a smaller population of koalas.

Senator DI NATALE: You suggest that one thing that needs to happen in that environment is that a detailed koala management strategy needs to be developed and that HVP are on the way to doing that. What does a koala management strategy look like? What does it involve?

Mr Menkhorst: It would include elements such as an analysis of the entire landscape and the habitat availability and distribution and the connectivity between patches and an estimate of population densities in the different vegetation communities in that area and therefore an estimate of the total population that an area could support. Then there are procedures that would try and maintain that target population, those sorts of things.

Senator DI NATALE: What sorts of procedures?

Mr Menkhorst: Habitat retention, habitat connectivity. There is not that much else with koalas. Koalas have relatively simple habitat requirements. They need enough eucalypts of the relevant forage species growing on sites that are adequately good in terms of nutrient availability and water availability. Other issues such as dog predation or vehicle mortality or even disease I think are relatively minor in areas where you have a reasonably large population in a reasonably large extent of habitat.

Senator DI NATALE: How much of that work has been done in this area?

Mr Menkhorst: Only the work that HVP have done on their land. I think HVP deserve to be commended for the work they have done. They are leading the way.

Senator DI NATALE: Why hasn't more detailed work been carried out?

Mr Menkhorst: You see, the koala is a common animal in Victoria. For a department and a government that are struggling to maintain our threatened species it does not make a lot of sense to spend a lot of resources on a species that is not considered to be threatened.

Senator DI NATALE: But we are talking about distinct populations of koalas, aren't we? We are talking about one population here that is genetically diverse and potentially provides us with a population that will be much more adaptable to disease, potentially climate change and other things. Would it not make sense that this is one population that deserves more attention than perhaps some of the other populations that we have talked about?

Mr Menkhorst: Yes, when it comes to putting resources into koala conservation that is certainly the first area you would go to.

ACTING CHAIR: A couple more questions. Firstly, we have evidence from Dr Meltzer when we had the inquiry in Canberra of foxes taking young koalas in Victoria. Can you tell the committee about that?

Mr Menkhorst: I am unaware of any information on that. I think dingoes or dogs probably take young koalas. Powerful owls rarely do.

ACTING CHAIR: Have you got any evidence on that?

Mr Menkhorst: On the dogs?

ACTING CHAIR: Dogs in Victoria?

Mr Menkhorst: Not direct data, no.

ACTING CHAIR: Has anybody ever been prosecuted in Victoria for the death of a koala?

Mr Menkhorst: I do not know. Quite possibly.

ACTING CHAIR: We have heard evidence about an 80 per cent loss of population of koalas in the mulga lands of Queensland due to the drought. What was the impact of the drought here in Victoria on koala numbers?

Mr Menkhorst: We have no data, but it was probably quite significant. It seems to have been for a whole range of native fauna.

ACTING CHAIR: Was there tree loss here, as there was in the mulga lands?

Mr Menkhorst: I was very interested in Professor Carrick's comments on that. Certainly nothing to the extent that he described. But, yes, trees died in the 12 years of drought that we have had. I am not sure why people talk in the past tense about that.

ACTING CHAIR: Because it has been raining.

Mr Menkhorst: We had one wet summer and that was a La Nina event. That was tropical rain that came down in the winter, which is now panning out panning pretty much like the previous 10 have been.

ACTING CHAIR: You have noted in the government's submission that 15 per cent of koala habitat in Victoria may have been burnt since 1990—

Mr Menkhorst: 2000.

ACTING CHAIR: 2000, in bushfires. Would you expect the population to have been diminished by that or not affected?

Mr Menkhorst: Certainly diminished.

ACTING CHAIR: Finally, the mobility of koalas; do you have any information about their ability to move from one area to another or on how far they range in their habitat?

Mr Menkhorst: There have been some radio-tracking studies that indicate that koalas are highly mobile and are capable of ranging for quite some distances—kilometres—and through a wide variety of habitats. Koalas have the capacity to colonise newly available habitat. But that ability would be greatly enhanced by corridors of treed vegetation, simply because the presence of trees gives wandering animals a refuge should they be confronted by dogs, cattle or whatever, which apparently happens.

ACTING CHAIR: What sort of newly available habitat is there for the koala in Victoria?

Mr Menkhorst: Victoria is the home of the Landcare movement. There has been an enormous community effort into revegetating areas in Victoria, so there is quite a lot of newly growing eucalypt woodland and strips of eucalypt open forest.

ACTING CHAIR: We heard this morning that there has been an improvement in the koala population at Gunnedah because of people planting trees. What monitored or scientific evidence is there of that in Victoria?

Mr Menkhorst: I do not have any direct evidence off the top of my head. There have been studies looking at the utilisation of revegetation sites by birds, but I am not aware of any that involve mammals.

ACTING CHAIR: Finally, are there any studies currently underway by the Victorian government into any aspects of the koala at all?

Mr Menkhorst: The Victorian government is monitoring population densities at the sites that are actively managed, where population numbers are actively managed and is modelling the response of populations to that management action. But, apart from that, there is no research as such by the government.

ACTING CHAIR: At any of those sites which have been actively managed, is the koala population increasing?

Mr Menkhorst: No. We are trying to make it decrease.

ACTING CHAIR: There is nowhere where you are trying to increase it?

Mr Menkhorst: Not actively trying, no.

ACTING CHAIR: Mr Grear, I want to ask you the same question about the drought. What impact did it have on the koala population in South Australia?

Mr Grear: The observations were in those extreme times in terms of heat stress. Again, koalas in the Mount Lofty ranges were seeking water, so there was that human interaction. On Kangaroo Island there was no population decrease attributable to the drought. There were not high numbers of trees dying on Kangaroo Island. The wildfire event that occurred on Kangaroo Island in 2007 was very large. But 95 per cent of the high-quality koala habitat was not burnt in that particular situation, so the impact on the koalas was not enormous. We do not have any firm evidence of the long-term impact of the drought on koala numbers.

ACTING CHAIR: Does that mean five per cent was burnt?

Mr Grear: Yes.

ACTING CHAIR: What has been the impact there?

Mr Grear: After the fires, those areas were identified and a trapping program was run. That was one of the few occasions when those animals were translocated. They were still on Kangaroo Island but they were relocated to other high-quality habitat. The evidence since then has been that those areas are regenerating and koalas are starting to move back into that high-quality habitat.

ACTING CHAIR: Do you know what happened to the translocated koalas?

Mr Grear: Off the top of my head, I am not aware of any evidence on whether they survived in that new habitat.

ACTING CHAIR: Have you got any evidence that koalas translocated to an established koala habitat survive?

Mr Grear: Obviously the numbers are fewer, but when koalas were translocated in the south-east, radio tracking of those individual koalas was done. It was interesting that they quickly found their way back to their own zone. That was the evidence back in the late-nineties and into the 2000s of the work that was done on the translocated ones. The policy on Kangaroo Island is that, when the animals are sterilised, they go back to where they came from.

ACTING CHAIR: There is a pretty strong impulse in lots of things. If you have ever had trouble with possums, you will know about that! Thank you very much.

Senator McKENZIE: You might not be able to answer this but, if you can, I would appreciate it. Given the genetic importance of the Strzelecki koala, is there a mechanism whereby the state government can list certain populations within the state as vulnerable but not others? I know you said earlier that, in Victoria, no community organisation or person had applied to the state government to make it vulnerable, but is there a way for us to differentiate between populations using state mechanisms?

Mr Menkhorst: My understanding is that, under the Flora and Fauna Guarantee Act, there is not; you have to list the entity in its entirety.

KAMBOURIS, Mr Peter James, Regional Ecologist, Southern, Forests NSW

STIRLING, Mr James Andrew, Manager, Planning and Environment, Native Forests Operations, Forests NSW

[14:28]

ACTING CHAIR: Welcome. I thank you for being here to talk to the committee today. As government officials you will not be asked to give opinions on matters of policy, though this does not preclude questions asking for explanations of policy or factual questions about when and how policies were adopted. We do not have a written submission from you, but we would certainly be happy to take one. Would you like to make an opening statement?

Mr Stirling: Yes. Forests NSW welcomes the opportunity to appear before the committee to contribute information to the inquiry into the status, health and sustainability of koala populations in New South Wales. Forests NSW is the registered business name of the Forestry Commission of New South Wales and it operates as a public trading enterprise within the Department of Trade and Investment, Regional Infrastructure and Services. The Forestry Commission is constituted under the Forestry Act 1916 and is subject to the direction of the responsible minister. Forests NSW manages about two million hectares of public native forests and an additional 280,000 hectares of public planted forests to deliver a range of environmental, economic and social benefits to the people of New South Wales. Of the two million hectares of public native forests, about one million hectares are available for harvesting, and some two to three per cent are harvested annually.

Apart from the Forestry Act, the main regulatory framework governing the way Forests NSW manages the public native forests is comprised of the regional forests agreements, the NSW forest agreements and the integrated forestry operations approvals and their embedded threatened species licences, fisheries licences and environmental protection licences. The threatened species licences are designed to protect threatened species and the habitat of threatened species from forestry activities. In relation to koalas, the licences prescribe the way in which Forests NSW must conduct surveys for the detection of koalas, signs of their presence and signs of their preferred habitat. The licences also prescribe the measures that must be put in place to protect them.

Forests NSW is aware that there is continuous forest cover from Queensland to Victoria and that there are records of koalas scattered throughout. Forests NSW is also aware that there are healthy and viable populations of koalas in the forests of the North Coast, Central Coast, South Coast and northern inland New South Wales. It is not feasible to count koalas at a landscape scale because they are difficult to see and have home ranges varying from about one hectare to hundreds of hectares. However, credible estimates of population size can be made based on knowledge of home range size, area of habit and rate of occupancy of that habitat. Home range size is estimated by radio tracking and mapping, the area of habitat is estimated by remote sensing and the rate of occupancy is estimated by thorough surveys of a sample of each habitat type. Precise estimates can be obtained for dense populations in prime habitats, and imprecise and costly estimates can be obtained for low density populations in habitats with low carrying capacity.

In 1991 koalas were detected at 13 per cent of sites in eucalypt forests in the Coffs Harbour, Dorrigo, Grafton and Glen Innes public forests. This equated to an estimated population of about 5,000 koalas. In 1992, koalas were the most common arboreal mammal in the Urbenville state forests with a detection rate of 46 per cent. Thus, a conservative estimate of the koala population in that area would be 11,000. Between 1990 and 1997 a radio tracking study of koalas in low carrying capacity habitats at Eden provided information on the home range size of seven koalas, and a regional listening and playback survey achieved a detection rate of four per cent. This information supports a population estimate of about 1,500 animals.

A reliable conservative estimate of the moderately dense koala population in the Pilliga scrub in 1999 was 15,000 koalas. On this basis, 32,500 koalas were known to be present, or could be reasonably assumed to be present, in New South Wales on the basis of forest type. Forests NSW has not collated information to estimate the abundance of koalas on the Central Coast; however, on the basis of similar forest types and an abundance of records, it could be reasonably assumed that there are similar numbers as on the North Coast—about 5,000 animals. The apparent abundance of records of koalas at any place and time generated by other methods simply reflects the amount of time spent looking for them.

In 1987 a postal survey showed that koalas are distributed throughout central and coastal New South Wales, principally on the Central and North Coast, and that their distribution is related to the presence of preferred food trees, primarily trees on nutrient-rich soils selected for agriculture. As a generalisation, koalas prefer drier forest types to wetter ones. In the north of the state, their preferred food tree species are known to be tallow wood, red gum, grey gum and swamp mahogany. In the south of the state preferred food tree species are manna gum and red gum, but they have been largely cleared for agriculture. In the forests, secondary food tree species are monkey gum, maiden's gum, woolly butt, grey box, river peppermint, yertchuk and apple. In the west of the state preferred food tree species are red gums and pilliga box.

Forests NSW believes that the main threat to the koala is permanent clearing of its habitat primarily through agriculture and urbanisation. It also believes that catastrophic fire and eucalypt decline will become threats if fire management is not improved. Forests NSW does not believe that logging of public native forests in New South Wales threatens koala populations. On the north coast, koalas are significantly associated with heavily logged areas, with a 22 per cent detection rate, rather than unlogged or selectively logged areas, which have a five per cent detection rate. A short-term study in the Pilliga forest showed that white cypress pine logging did not affect koalas' survival, use of habitat or reproduction. Studies at Eden showed that koalas preferentially use logged coupes in logged/unlogged mosaics and that koalas were found in the same coupes before and after logging.

Forests NSW is unable to comment on the consequences of listing the koala under the Environment Protection and Biodiversity Conservation Act at this time. The consequences would depend on the conditions and limitations that flowed from such a decision. Insofar as the National Koala Conservation and Management Strategy applies to the management of state forests in New South Wales, its aims, objectives and actions are considered adequate. Forests NSW believes that the current regulatory framework that applies to the protection of koalas and their habitat on state forests in New South Wales is appropriate and will be appropriate for the future. However, various conditions within the threatened species licence may be able to be improved in the future, using current knowledge of tree and forest-type preferences, home range sizes, population densities and distribution, and threats.

Forests NSW believes that the current interaction of state and federal laws and regulations as they apply to the protection of koalas and their habitat on state forests in New South Wales is appropriate and will be appropriate for the future. A bilateral agreement between the state and the Commonwealth makes the regulation of forestry activities on state forests in New South Wales effective and efficient.

ACTING CHAIR: Mr Stirling, would you be willing to table that document you have just read from? You do not have to, but I am inviting you to if you would like to.

Mr Stirling: I can do that. I have a copy without my scribble on it.

ACTING CHAIR: Thank you. Mr Kambouris, would you like to make an opening statement?

Mr Kambouris: I have no further comment or an opening statement, thank you.

ACTING CHAIR: I will start off. Mr Stirling, you have said that koalas prefer logged coupes to unlogged coupes. Does it follow that if all the forests were logged you would have a better or happier koala population?

Mr Stirling: No, I do not think so. It just means that from time to time koalas prefer logged areas to unlogged areas.

ACTING CHAIR: Why is that?

Mr Stirling: I suspect it has to do with the new shoots and the different nutrient status of growing trees as compared to old trees.

Mr Kambouris: Yes, that is a fair assumption.

ACTING CHAIR: So where you log forests the population increases. Is that the outcome?

Mr Stirling: I do not know that anybody knows that. The quote is from a particular area, and unless you do radio tracking you cannot get a good handle on populations of koalas.

ACTING CHAIR: Have you done radio tracking?

Mr Stirling: Those figures come from radio tracking exercises, yes.

ACTING CHAIR: Can you tell me how that radio tracking exercise was undertaken? That was at Eden, wasn't it?

Mr Stirling: They were on the North coast, the Central Coast and in northern inland New South Wales as well.

ACTING CHAIR: Okay, but your statement about koalas preferring logged coupes was related to Eden.

Mr Stirling: That is correct.

ACTING CHAIR: Can you tell me how that assessment was done?

Mr Stirling: No, I do not have the specifics of that piece of work here. I can certainly get it for you.

ACTING CHAIR: Would you please take that on notice.

Mr Stirling: Yes, unless you know any more about it, Mr Kambouris.

Mr Kambouris: I think it is a better option to table the report. There is a scientific report associated with that survey effort.

ACTING CHAIR: Was radio tracking used there?

Mr Kambouris: Yes, for several animals.

ACTING CHAIR: I am just interested in how you get an assessment of a population through radio tracking. Can you explain that to the committee?

Mr Kambouris: An assessment of population numbers?

ACTING CHAIR: Yes. I think Mr Stirling was saying that the preference of koalas for logged coupes as against unlogged coupes was established through radio tracking.

Mr Stirling: That is right. The home range is estimated by radio tracking animals and then you work out the area of habitat estimated by remote sensing, so that is preferred forest types. Then you need to do a sample to work out the rate of occupancy of each of the habitat types.

ACTING CHAIR: How does the radio tracking relate to that sample to work out the rate of occupancy?

Mr Stirling: The radio tracking provides an estimate of the area of home range I believe.

ACTING CHAIR: Yes, but how does that tell you how many koalas are occupying a logged coupe, for example?

Mr Kambouris: The logged coupe in the example would be occupied by one animal. It is about the proportion of time that was spent within that habitat or that home range and it spent a significant proportion of its time within logged areas.

ACTING CHAIR: When you are assessing a koala population surely you are assessing the natural population in that area. Without all of the koalas being fitted with radio-tracking devices you are not going to know where the population is or what it is, are you?

Mr Stirling: It is only a sample. All estimation methods are samples.

ACTING CHAIR: Okay. In regard to the Dorrigo region that you spoke about, what has been the population increase after logging at Wild Cattle Creek?

Mr Stirling: I do not have any information about that. These are published papers that I read out to you. Forests NSW has not done any more radio tracking of animals in these populations since this data was produced.

ACTING CHAIR: When was that?

Mr Stirling: In 91, 92, 97 to 99 and 99.

ACTING CHAIR: So there has not been any data from the last decade?

Mr Stirling: We have not done any radio tracking. I do not know what other data is available.

ACTING CHAIR: We had evidence from Victoria earlier that logging almost certainly affects koala populations. You are giving us the contrary evidence that it actually improves the koala population. Can you tell the committee how we might sort out which of those assertions is the right one?

Mr Stirling: I think they are different. I think the Victorians said they were doing clear-felling. Logging in New South Wales is under a completely different regulatory regime where we do not do any clear-felling.

ACTING CHAIR: You said that there are records of koalas scattered through the forests from north to south in New South Wales. We have been looking at the koala population near Bermagui. Is that population actually connected to populations further north? Do you know if it is isolated to the north or indeed where the next population north of it is?

Mr Kambouris: To the best of my knowledge there are records immediately to the north of Bermagui including state forests and national park estate.

ACTING CHAIR: Is that the Mumbulla State Forest?

Mr Kambouris: Further north of Mumbulla. Mumbulla is to the south of Bermagui. There are records through the Bodalla State Forest going into the Eurobodalla area to the north. There are also scattered records to the west going up to the escarpment on the Southern Tablelands.

ACTING CHAIR: Would you provide the committee with those records?

Mr Kambouris: Certainly.

ACTING CHAIR: How recent are they?

Mr Kambouris: They vary. Historic records go back from landscape scale survey efforts through the eighties and nineties, and postal surveys were undertaken by the Office of Environment and Heritage more recently, with some information published in scientific journals as recently as the last year or two.

ACTING CHAIR: Just relating to the Mumbulla logging proposed and actual logging area, are there koalas present?

Mr Kambouris: In the areas that we have surveyed for preharvest surveys, no.

ACTING CHAIR: Are there any in adjacent areas?

Mr Kambouris: There are koalas scattered throughout the park and forest estate in that region, yes.

ACTING CHAIR: But not in the area that is to be logged?

Mr Kambouris: In the area that is earmarked for logging, no, not at this point in time.

ACTING CHAIR: Why is that?

Mr Kambouris: It is because the areas earmarked for logging have been spotted gum, and that does not appear to be a preferred browse species for koala in that vicinity.

ACTING CHAIR: And there has been no evidence on the ground, pellets or other evidence, of koala habitat in any of that logging area?

Mr Kambouris: In the areas where operations are proposed or occurring, no.

ACTING CHAIR: Since when?

Mr Kambouris: I can only comment on the preharvest surveys that have occurred in recent years. Also, similarly, there has been a broader survey effort led by the Office of Environment and Heritage that we have been heavily involved with. The outcomes of those survey efforts have suggested that the spotted gum forests in the vicinity do not appear to be occupied.

ACTING CHAIR: Spotted gum is not a koala habitat?

Mr Kambouris: It does not appear to be on the South Coast, Senator.

ACTING CHAIR: Spotted gum is not a food source for the koala?

Mr Kambouris: It does not appear to be. I am not aware that it has come up as a browse feed tree species in the South Coast area.

ACTING CHAIR: Are you aware that it has not been and is not?

Mr Kambouris: I cannot speak about that historically. But, from the current available information, I am not aware that it has been identified.

ACTING CHAIR: In the adjacent forest what is it that the koalas are eating?

Mr Kambouris: I would probably need to provide some information on the current surveys or research that is occurring. They are not Forests NSW projects; they are projects that have been led by the Office of Environment and Heritage. I am not aware of the specifics or the outcomes of that. It has not been published at this point.

ACTING CHAIR: You have said that they do not eat the spotted gum. Can you tell the committee what they do eat in that region?

Mr Kambouris: To the best of my knowledge, the preferred browse species for the koalas in the south-east of New South Wales, similarly throughout their southern extent, including Victoria, would be the red gum species, which is typical throughout New South Wales, and also the manna gum species to the southern extent of their range in that local area there. The state forest areas do not include those areas. They were mostly cleared for agricultural reasons on the more fertile river flats.

ACTING CHAIR: What are the koala populations that you have been telling us are in the area eating if not those two varieties of gums?

Mr Kambouris: As far as I am aware, and based on the information that has been published, the key browse species, as Mr Stirling mentioned earlier, would include woolly butt, grey gum, yertchuk—further south, I would assume—coast box and river peppermint as well, and apple.

ACTING CHAIR: Are any of those logged?

Mr Kambouris: Harvesting would occur within forested areas that contain those tree species.

ACTING CHAIR: So the answer is yes?

Mr Kambouris: Yes.

ACTING CHAIR: You have said that there are 1,500 animals near Eden. Whereabouts?

Mr Stirling: The published paper says the public forests in the Eden area.

ACTING CHAIR: Whose published paper is that?

Mr Kambouris: There are a number of papers that refer to the south-east area. Some of those were published in the late nineties, and also more recently by the same authors. The density of occupancy in the south-east is quite low, as has been mentioned previously, I believe. Based on the surveys that have been undertaken historically, looking at the density, the available habitat and the potential carrying capacity of that habitat, and also looking at more recent data that suggests there has not been a change in the occupancy or probable abundance within those forests, it is estimated that potentially over 1,000 animals could occupy that available habitat. That remains unchanged over the last four or five decades.

ACTING CHAIR: So this figure of 1,500 is not a count.

Mr Kambouris: No. As has been mentioned earlier, it is pretty difficult to try and get an accurate count at a landscape scale, particularly in low-density populations.

ACTING CHAIR: Can you tell the committee how many koalas have actually been counted south of Sydney in the last decade?

Mr Kambouris: I would have to refer to the wildlife atlas. I am not aware of the exact numbers.

ACTING CHAIR: Would you do that, then, and come back to the committee with a number. Do you know, Mr Stirling?

Mr Stirling: No.

ACTING CHAIR: Have you got any idea?

Mr Stirling: No.

ACTING CHAIR: But we do know from radio tracking that, where areas are logged, their population is likely to increase?

Mr Stirling: I do not think we went that far. What we said was that the published research shows that, in some areas, on the North Coast koalas are significantly associated with heavily logged areas, with a 22 per cent detection rate, as opposed to unlogged or selectively logged areas, with five per cent. It is in that published literature.

ACTING CHAIR: You said unlogged or selectively logged areas have five per cent but logged areas have 22 per cent, but a little earlier you said that selective logging was not a detriment to koalas. But on those figures it would appear that selective logging does not leave you with as good a population as complete logging.

Mr Stirling: The literature says that heavily logged areas had a detection rate of 22 per cent, as opposed to unlogged or selectively logged areas, with a five per cent detection rate. So with all of the surveys that we carry out pre logging, for instance—I do not know that that comes from our pre-logging surveys—from that published paper, I think, all you can check for is detection. You can only detect or not detect; you do not know anything about the population size.

ACTING CHAIR: But, from your detection study that you are referring to, you would do better to completely log an area than to selectively log it as far as koalas are concerned.

Mr Stirling: I do not know that it is a cause and effect without going through the population analysis and the studies. What we are saying is that you can go back and find them in heavily logged areas more frequently than you can in unlogged or selectively logged areas.

ACTING CHAIR: Do you think that might be because you can actually see them on the ground rather than up in the trees?

Mr Stirling: I do not know. You would have to read the paper and find out what it meant. I think it means that if you have heavily logged an area previously—30 years previously, perhaps—then you can find them in those areas more frequently than you can in unlogged areas.

Senator DI NATALE: What do you do if you see a koala? What is the process?

Mr Stirling: In a pre-logging survey?

Senator DI NATALE: No, if you are about to log.

Mr Stirling: There are a variety of different prescriptions required under the licences from the North Coast to the South Coast and inland, but if you detect one then, on the North Coast at least, you have to put an exclusion zone of a specified area around that tree or its high-use area, or you have to retain a higher level of preferred feed trees in what they call intermediate-use areas.

Senator DI NATALE: How often would that happen?

Mr Kambouris: On the North Coast, I could not speculate. I suspect, though, given the abundance of koalas that that may occur regularly. On the South Coast, that has not occurred in some time.

Senator DI NATALE: So it is different to what happens in Victoria, where apparently operations are ceased.

Mr Kambouris: No. If an animal is observed in an area during an operation, the operation is ceased. I think the response that was given is aligned to a detection of an animal during a pre-harvest survey and the prescriptive measures in place.

Senator DI NATALE: So it is the same procedure in place for once an animal is—

Mr Kambouris: Yes. The operation will cease.

Senator DI NATALE: How often does that happen?

Mr Kambouris: I am not sure. I could not speculate there.

Senator DI NATALE: Would you say that happens often?

Mr Kambouris: Again, I could not speculate. We could inquire and provide some information, but we cannot speculate at this point.

Senator DI NATALE: I would be interested to hear how regularly that occurs.

ACTING CHAIR: I want to go back to the question about the actual koala population in the Eden and Bermagui area. Can you tell me, on the records of Forests NSW, when a koala was last sighted in that region?

Mr Kambouris: During pre-harvest surveys or generally speaking?

ACTING CHAIR: Generally speaking.

Mr Kambouris: Probably within the last 12 months, during broader surveys.

ACTING CHAIR: Can you tell me when and where that was?

Mr Kambouris: I think that information would be available through the Office of Environment and Heritage. It was their project. We could look into that.

ACTING CHAIR: I wonder if you would be kind enough, because they are not before the committee, to try and get that information and provide it to the committee.

Mr Kambouris: Yes. If it has not already been provided, we can certainly do that. That information actually would be part of the wildlife atlas information that you have requested, so it would be evident in that. Those records would be included.

ACTING CHAIR: Regarding New England, in 1987 or 1988 an officer of your organisation gave evidence that when a koala—this is at Walcha—is spotted in a tree the tree is not knocked down but it is looked at the next day and, if the koala has gone, the tree is then knocked down. Is that still how it works with Forests NSW?

Mr Stirling: I do not know about the situation you are referring to, but the general conditions in the licences require the retention of a certain amount of habitat throughout the harvest area anyway. If it was a tree that was being retained then it would be retained. If it was a tree that was going to be harvested, provided it was not within one of these exclusion zones or a zone with a higher retention rate of trees triggered by the presence of the koala, then those trees could be harvested.

ACTING CHAIR: If a koala has been seen in one of those trees.

Mr Stirling: I would have to get out the conditions of the licence and have a look. I do not know what they are off the top of my head.

Mr Kambouris: As I understand the requirements of the threatened species licence, not just in the north-east but consistently, if a species has been detected in a tree—and that would be direct or indirect detection—that tree would be retained and would have an exclusion around it.

ACTING CHAIR: How big would that exclusion be?

Mr Kambouris: I believe it is a 50-metre radius exclusion around that tree in Eden. If there are multiple trees within a vicinity then they are linked, but that is additional to the other exclusions and habitat retention requirements within a compartment.

ACTING CHAIR: So it is a 50-metre radius of the tree these days.

Mr Kambouris: Yes.

ACTING CHAIR: What is the size of logging operations, coupes, that have been logged in New South Wales in 2011?

Mr Stirling: It depends what you mean by the logging area. Most of the compartments on the North and the South coast range from 150 to 300 hectares—in the Eden area—a logging coupe, an area that is able to be harvested within a compartment, is about 30 hectares.

ACTING CHAIR: Are there any logging operations in New South Wales where native forests are being replaced by exotic species?

Mr Stirling: Not on public lands.

ACTING CHAIR: That has finished these days?

Mr Stirling: Yes.

ACTING CHAIR: You gave the figures for Coff's Harbour, the Pilliga and the Central Coast. On my sums, the number of koalas came to 37,500 for New South Wales. Is that an overall number or do you have another figure for what might be the population of koalas in either forests under your care or as a total for New South Wales?

Mr Stirling: No, that is the most up-to-date information on population estimates that we have.

Mr Kambouris: That does not include other private lands. The figure we have given is for public land, predominately forests.

ACTING CHAIR: Thank you.

Senator McKENZIE: When was your last regional forest agreement?

Mr Stirling: The most recent assessment was in the south-west cypress. Is that the one you are talking about? It only just commenced in July this year for the south-west cypress.

Senator McKENZIE: That was for the south-east forest in July this year?

Mr Stirling: No, that was the south-west cypress forests. The south-east coastal New South Wales was in 1998 or 1999.

ACTING CHAIR: I have a question about the Mumbulla State Forest because, as you know, it is of some contention. What are the future logging plans for that forest?

Mr Kambouris: I am not aware of the area that you are referring to.

ACTING CHAIR: Mr Stirling knows because he knows it is south of Bermagui.

Mr Stirling: I think Mr Kambouris did know but, in any event, all of the state forests are on a harvesting schedule for one time or another. Other than the areas that are not able to be harvested, the rest of it would be planned to be harvested some time in the near future.

ACTING CHAIR: Could you supply the committee with the details about the logging plans for the Mumbulla State Forest?

Mr Stirling: When it is scheduled to be harvested?

ACTING CHAIR: The schedule and the extent, yes.

Mr Stirling: We normally work on a three-year rolling plan. I do not know that I have any more information further out than three years, but we can give you an indicative two years out and a more definite one-year plan.

ACTING CHAIR: Do you not have 10-year plans?

Mr Stirling: No, we have more detailed three-year plans. As I said, you will find that most of the forests in the areas subject to the IFOAs would be logged over a 20-year period.

ACTING CHAIR: Do you have a 20-year indicative proposal?

Mr Stirling: No, not compartment by compartment and forest by forest. We have modelling that tells us the strategic plan for the whole of the area but then, based on markets and wet weather and all sorts of things, we do it on a rolling three-year plan.

ACTING CHAIR: Can you give the committee a copy of the strategic plan for the area, knowing that it is subject to those influences.

Mr Stirling: Probably, though I will have to ask the people who do the modelling.

ACTING CHAIR: Thank you.

Proceedings suspended 15:04 to 15:22

HARRISON, Professor Peter, Member, Threatened Species Scientific Committee

HUMPHREYS, Dr Bill, Member, Threatened Species Scientific Committee

TAYLOR, Dr Andrea, Member, Threatened Species Scientific Committee

WOINARSKI, Dr John, Member, Threatened Species Scientific Committee

ACTING CHAIR: I welcome witnesses from the Threatened Species Scientific Committee. As Commonwealth officers, you will not be asked to give opinions on matters of policy, though this does not preclude questions asking for explanations about those policies or factual questions about when and how policies were adopted. I know you do not have a written submission, but would any of you like to make an opening statement?

Prof. Harrison: Thank you for this invitation to appear before your inquiry as representatives of the Threatened Species Scientific Committee. We welcome the opportunity to discuss this important issue with you. We would like to very briefly introduce some aspects of our committee, our responsibilities within that committee and our consideration of the koala's conservation status, and some contextual information. By way of background, the Threatened Species Scientific Committee is a group of 10 independent experts appointed by the minister to provide advice about conservation matters defined in the Environment Protection and Biodiversity Conservation Act. One of the principal areas of our consideration relates to the assessment of native plant and animal species as eligible for listing as nationally threatened. We provide advice to the minister on this and other matters, but the committee does not list species under the act, as that is the role of the minister. The scope of the committee's membership and expertise is deliberately broad, but we all have considerable expertise in conservation biology and related fields. That is a deliberate strategy in order to provide as comprehensive as possible an assessment of all components of Australia's environment and biodiversity rather than a narrow focus on more conspicuous and better-known components.

Our consideration of species and ecological communities for their eligibility for listing as threatened is orderly and consistent and based on clear and explicit criteria. These criteria are set out in the act and, in turn, are derived from the criteria established and used across the world by the International Union for the Conservation of Nature.

The committee is aware of and concerned about declining koala populations and aware of public concern about this. The committee considered the koala's status for the third time at eight of its 10 meetings from June 2008 to June 2010 and held a workshop of koala experts, and the advice it provided to the minister was based on all available information.

Assessment of the koala is neither straightforward nor simple. The koala occurs across a very extensive area and a wide range of habitats. It faces a range of threats. Some populations are obviously in severe decline. Other populations are over-abundant and require active management to reduce or constrain their abundance. And historically, koala populations have shown very substantial fluctuations. This set of factors complicates assessment, but they are not of themselves the most formidable obstacle. Instead, we found our assessment to be most complicated by insufficient data on population size and trends across many areas of the range of the koala. The lack of consistent long-term monitoring populations throughout the range of this large, unmistakable diurnal mammal clearly indicates that our nation has a long way to go to adequately monitor and manage its biodiversity.

To assess the national extent of the koala, we examined all of the available published and unpublished data to determine whether any populations warranted separate consideration on the basis of evolutionary distinctiveness. We found no convincing evidence of long-term separation of koala populations throughout its range. Therefore, the committee undertook its assessment on the basis of a single, national population. We are happy to expand on that aspect.

As you would be aware, species can meet any of the five criteria to be eligible for listing as threatened. In the koala's case, it is readily evident that it does not fit four of the criteria—those relating to small geographic range, very small population size, a combination of small population and decline or mathematical modelling demonstrating probable extinction. Accordingly, our consideration focused in this case on criterion 1, relating specifically to the extent of population decline. Ultimately, we sought to use all available information to estimate koala populations across segments of their range and to apply the most appropriately sourced trend information to

drive the most plausible estimate of total population and rate of change in the number of individuals. This was as objective and comprehensive as it was possible to be, based on all available information.

Our conclusion was that the koala approached, but did not reach, the threshold required to qualify for listing as vulnerable under criterion 1. However, we recognise that the species suffers a series of conservation problems across its range and is in decline. We also recognise that our assessment highlighted the considerable uncertainty about koala abundance and that assessment could be undertaken with much greater confidence if a concerted effort were invested in enhancing and coordinating existing monitoring and to establishing the existing set of monitoring projects in other regions where none exists at present.

We bring your committee's attention to an analogous recent assessment. The IUCN recently undertook a comprehensive program for assessing the conservation status of all of the world's mammal species based on expert advice and the application of these consistent criteria. We note that this 2008 assessment recognised 78 of Australia's 349 mammal species to be eligible for listing as threatened, but they concluded that the koala met no criterion and was classified as 'lower risk, least concern'—the lowest possible conservation status. Our conclusion in 2010 was that the koala should not be listed as threatened because it did not meet any of the listing criteria. This does not mean that the koala will be treated with management neglect or disdain. We note that there is a national management plan for the species and specific conservation measures in all of its range states. For example, one population in the south-east Queensland bioregion at greatest risk is listed as vulnerable under Queensland legislation.

Over this period the committee also considered the status of 66 species and seven ecological communities. Most of these other candidates had conservation concerns that were far more parlous than that of the koala. Those that we recommended for listing readily met the EPBC Act criteria. Some of the candidate species had fewer than 100 individuals remaining. Many of these recently listed species are largely unknown to the Australian public, are largely unresourced and have little or no protection. Over the course of our deliberation on the koala we also noted that one other Australian mammal species, the Christmas Island pipistrelle, became extinct. Our obligation under the EPBC Act is to advise the minister on those species that are most threatened with extinction. We have done this with transparency, consistency and fairness through the objective application of the criteria that are internationally recognised as most appropriate. Thank you again for the opportunity to discuss the koala assessment and our advice to the minister.

ACTING CHAIR: Thank you very much. I might begin by asking about the IUCN assessment in 2008, which is the international assessment. Do you know what information they may have had that we do not have or that you did not have available in making an assessment here in Australia?

Dr Woinarski: The information they had available was everything that was publicly available in Australia at that time. It did not include the recent drought related decline in, for example, the mulga lands of south-western Queensland but it was done in collaboration with recognised experts in Australia.

ACTING CHAIR: You have led me straight into the next question. We have got evidence of an 80 per cent fall in population in an important and large area of habitat for the koala in the mulga lands of Queensland and by inference concern about the drought and weather-related potential on the habitat right across eastern and south-eastern Australia. Was that information available to you when you made the last assessment?

Dr Woinarski: To an extent. We got early information on that which indicated a decline of 50 per cent in the mulga lands. The more recent analysis indicates that the decline was more precipitous even than that. As you can probably recognise through reading our advice, we had a range of problems with the assessment. The drought driven decline is one specific example of that. If you look at the criteria, it is explicit that we should not include considerations where the cause of decline has ceased or is reversible. We had to use judgment about whether the drought had ceased and whether it was reversible. So to an extent the application of the criteria should be done most appropriately discarding the responses to climatic fluctuations. This follows the IUCN and the EPBC criteria.

ACTING CHAIR: In the committee's view, was that about a fluctuation or part of climate induced long-term impact on the habitat of the koala through this area of its range?

Dr Woinarski: Time will tell on that one. Certainly there have been a range of other droughts, including specifically the Federation drought of 1901 or thereabouts, which had as serious impact on the koala's habitat in Queensland. The records from the time speak of riding for days without seeing a sign of foliage on trees, and we know that koalas recovered from that one within 20-30 years. The question is still moot about whether climate change will increase the severity and frequency of drought. It is likely that it will, but we were forced to assess the immediate drought impacts over a 20-year period.

ACTING CHAIR: Do you think it is safe to compare the Federation drought with one a century later given the population, land clearance, dog numbers and other factors that may have changed in that century?

Dr Woinarski: All such climatic fluctuations are different. Immediately following the Federation drought there was a series of hunting episodes and episodes of clearing in Queensland as well. It is likely that the cocktail of factors this time around may be more damaging, yes.

ACTING CHAIR: To what degree do you work on the precautionary principle, which is mentioned up front in the EPBC legislation?

Prof. Harrison: It is very important in our considerations.

Dr Humphreys: Yes. The precautionary principle is usually stated in terms of lack of scientific certainty, but it is much more nuanced than that. There is a long discussion in the IUCN criteria about how the precautionary principle can be used. There are extreme values of both; you can use evidential only or precautionary only, or somewhere in between. The IUCN recommends strongly that you should use the moderate view of the precautionary principle, and the committee works on the basis that we take a moderate view on the precautionary principle.

ACTING CHAIR: What is a moderate view under the precautionary principle?

Dr Humphreys: That you weigh up the evidence as it stands. If I may go back one step further, how the precautionary principle is built into the way the assessments are made is that if a species, for example, is eligible for listing under a number of criteria then automatically the maximum—the most threatened—category is used, so the highest level of threat is taken. So there is an in-built factor in the precautionary principle in the running of the way the committee works and the way the IUCN system works.

ACTING CHAIR: We have had compelling evidence that habitat above all is the most important factor we are dealing with in the case of the koala, and then, as you know, there is this massive impact on the habitat of the mulga lands in Queensland. We have also had evidence about the incursion of human population growth and all that goes with that, including roadways and urban subdivisions, in South-East Queensland and north-east New South Wales. What is the moderate approach, using the precautionary principle, to those two processes?

Dr Humphreys: I think this is a really important point. If one takes land clearance overall as one's criterion for listing then literally most animals in Australia that live in forests would get listed. This has actually happened with the listing under the United States Endangered Species Act. They have taken into account—it is their main criterion, in fact, because they do not have any objective qualitative or quantitative criteria about endangerment—land clearance in the time of European settlement. If one did that, almost any species in Australia would be listed under the EPBC Act, and that is clearly an extreme position under the precautionary principle.

ACTING CHAIR: Again, there is an 80 per cent loss in the mulga lands of Queensland and evidence that such drought impacts will potentially be visited on the habitat of the koala elsewhere—and that includes everywhere—into the future, and there is erosion through human occupation of key koala habitats in South-East Queensland and north-east New South Wales. We are not here talking about the extreme interpretation of the precautionary principle. Let us take your moderate view. Do those factors not qualify in a moderate view of utilising the precautionary principle about the future of the range of the koala and the health of its habitat across its range in Australia?

Dr Humphreys: Clearly, all those things are going to impact on them. Many of them are not going to impact in the time frame in which the EPBC Act works, which is three koala generations or 100 years, whichever is the least, I think. If things are going to impinge in 100 years time—say, from climate modelling—that is really not an issue that can be taken into account for a specific listing.

Prof. Harrison: John, would like to provide some further input?

Dr Woinarski: If we have an 80 per cent decline in one population, as has been recognised for the mulga lands, the significance of that is a relative to the total population size. For example, if we wanted to draw human population demographic trends for Australia, we would go beyond simply what is happening at Milikapiti or Ramingining; we would try to ensure that we had population change information from as wide a range of the population as possible. In the case of the koalas, we recognise that it is still a very substantial population in Victoria and that makes up a very large proportion of the total koala national population. It is certainly undeniable and it is most unfortunate that there have been population declines in parts of Queensland, but we think that over the national perspective, which is our brief, the total population decline is substantially less than that.

ACTING CHAIR: You may or may not have heard Professor Carrick this morning—and this evidence has come from other witnesses before as well—putting forward the case that the koala population is not the same

across Australia. I know your committee has taken the view that it is. What do you say to the number of professional witnesses who have appeared before this committee who have said that there is a genetic difference between the northern and the southern koala populations, and indeed within the southern population in the Strzelecki south Gippsland area, the rest of Victoria and South Australia, and potentially the Bermagui area?

Prof. Harrison: That is a very important component of our assessment, so I will ask Dr Taylor to provide some information.

Dr Taylor: I have looked into this fairly extensively and we have all looked together at the data. The most relevant source of data for this question would be mitochondrial DNA sequencing. That has been done in a fairly patchy way across the range of the koala. A fairly comprehensive paper in the late nineties concluded that there was not any evidence across the range for long-term separation of any populations from each other. There has been some more recent work done with extra sequences added to the dataset from localised regions but, unfortunately, there has not really been a comprehensive comparison of all of the data that we have from across the country to put the local data into perspective. That just has not been done and it is something that really should be done to back up some of the claims about distinct populations. There is a lot of evidence that, for example, localised populations are suffering from recent habitat fragmentation impacts. So, in that sense, yes, they are genetically distinct, but that sort of genetic distinction can arise over the last two generations where major roads have gone in and stopped koalas from being able to disperse from one shire to another or one region—for example, in south-east Queensland where dispersal was stopped around local areas. That creates that level of genetic distinction is present that a lot of people talk about, but it is not necessarily the level of genetic distinction that we would consider to be significant in terms of an evolutionary scale distinction that might suggest that those populations had some sort of local adaptation that would make them behave differently to one another.

ACTING CHAIR: What would be an evolutionary scale genetic difference?

Dr Taylor: As I said, I would love to see a network of sequences from across the range of the species. There are lots of gaps in the sampling.

ACTING CHAIR: Why don't we have that, by the way?

Dr Taylor: As with most koala research, genetics is done in the same way which is that it is not funded by any central funding agency; it is just researchers—

ACTING CHAIR: Why not? Do you know?

Dr Taylor: Speaking as a population geneticist, to ARC population genetics is not necessarily a sexy, fundable thing to do. It is the same with monitoring. ARC obviously is the biggest, most significant funding agency for a lot of research in Australia, and it is very hard to get that sort of basic funding.

ACTING CHAIR: Do you know if there have there been any requests for such funding?

Dr Taylor: Not on a nationwide scale, no. People do do local studies, but it is trying to see how that all fits together.

ACTING CHAIR: Do you know why there have not been any requests for such funding?

Prof. Harrison: The ARC is set up to look at a more theoretical approach to understanding the natural world and other aspects, and unless you are coming up with some new interpretation or testing some new theory it is fundamentally difficult to get substantial funding for a project such as this. ARC does not typically fund monitoring, and it does not usually fund the sort of integrative study that we are seeking in terms of the genetic data, some of which currently exists. Clearly there are also some gaps in it, and what would be important would be for some resources to be made available to actually pull that together. Then you would get a comprehensive assessment, which is what we were lacking when we did this assessment.

ACTING CHAIR: Can I turn this on its head and ask you if you are sure that or have any definitive information you can give the committee showing that there are not two or more sets of genetically diverse koalas—for example, between the northern and southern populations?

Dr Taylor: We have always dealt with the idea that koalas, until European settlement, were a fairly continuous population. We know that they occur on both sides of the Great Dividing Range and they occur on both sides of rivers et cetera. So, unlike a lot of other species for which there are biogeographic zones where you can identify that there are discrete populations that occur that are separated by some sort of barrier, that is not really evident across the range of the species.

ACTING CHAIR: It has happened with wombats, hasn't it?

Dr Taylor: Do you mean that we have three species of wombat?

ACTING CHAIR: Yes. So why wouldn't that potentially happen with koalas?

Dr Taylor: Apart from in the south, the northern hairy-nosed wombat is quite obviously very geographically separate.

ACTING CHAIR: Was that always the case, when Europeans arrived?

Dr Taylor: No. When Europeans arrived there were populations in southern New South Wales and in Queensland as well, so clearly some time before Europeans arrived they had disappeared from regions in between. But, as far as we know, koalas have been reasonably continuously distributed.

Dr Woinarski: Can I add that our primary object is the national range of the species and preventing the species as a whole from becoming extinct. For the koala, there are three recognised subspecies which happen to coincide with jurisdiction boundaries and it is clearly an artifice with no genetic underpinning whatsoever. All species which occur continuously across eastern Australian forests will have some genetic variation across that range, but in most cases it is continuous; it is clinal variation and it is impossible to come up with any meaningful disjunctions in that genetic composition.

ACTING CHAIR: Why was criterion 2 not looked at when your committee did the assessment? That is the one for geographic distribution which is precarious to the survival of the species based on at least two of (a) to (c) where (b) is:

Continuing decline, observed, inferred or projected, in any of the following:

- (i) extent of occurrence
- (ii) area of occupancy
- (iii) area, extent and/or quality of habitat
- (iv) number of locations or subpopulations
- (v) number of mature individuals.

But we have heard about the continuing loss of isolated populations and that it is continuing now, not least in south-east Queensland and northern New South Wales. We have heard about the catastrophic drop in the mulga lands, which we were referring to earlier. I just wonder if it was clear that criterion two should have been dismissed as a matter to be entertained by the committee in assessing the status of the koala?

Dr Woinarski: Again, we are following the practice of the IUCN and what is stipulated in the EPBC. For this criterion to apply, the geographic range has to be extremely small—less than 20,000 square kilometres—but for the koala it is about one million square kilometres, so it falls out at the very first part of that process. There is a whole range of species, such as orchids which occur in one or two church yards, and this is the criterion which is particularly applicable for those sorts of species.

ACTING CHAIR: Can you just tell us again why the koala is listed as threatened in the United States but not here?

Dr Humphreys: There is no comparability between the way the United States Endangered Species Act works, and the criteria they use, and those adopted under the EPBC Act. The koala was listed by the United States in 2000, I think. The US Endangered Species Act has no qualitative or quantitative criteria about levels of endangerment, so there is no measure by which people doing an assessment can get really objective listing advice. Because of this lack of objectivity in the system, back in 2001 it was recommended that the Endangered Species Act adopt the IUCN criteria. I believe that has not been done yet.

ACTING CHAIR: On objectivity, can you or any members of the panel tell the committee what the population of koalas in Australia is?

Prof. Harrison: There are no scientifically corroborated, published estimates available of the total abundance of the koala, but our overall estimate, being conservative in aggregating the regional population data, was that it was over 200,000.

Dr Woinarski: It is a pivotal but troubling question and it is important for our assessment. I guess it is revealing that there is such disparity in perspectives about this particular question for such a large, conspicuous mammal. If we are failing to get a good population handle on this species then clearly we are having trouble managing biodiversity in the country anyway. We heard earlier today that the population in Victoria is at least 73,500, simply from those particular locations which are being monitored and it is likely to be substantially higher. We convened a workshop of experts on koalas to particularly try to address that question. We think that there are probably about 20,000 koalas now in South Australia. We have heard previously that there are probably at least 30,000 koalas on public land in New South Wales, and the residual populations are in Queensland. So our assessment, being as objective as possible—

ACTING CHAIR: By the way, you are a short of 200,000.

Dr Woinarski: I beg your pardon: that was about 100,000 in Victoria, about 20,000 in South Australia, at least 30,000 on public land in New South Wales—that is 150,000. We know that there are at least 12,000 in the mulga lands, and there are probably 15,000 in south-east Queensland. We can get to 200,000 relatively readily without attempting in any way to bias—this is using the best available expert knowledge.

ACTING CHAIR: I am aware of the figure of two million killed in 1927 or thereabouts. What is the committee's assessment of the historic population of the koala?

Dr Woinarski: For our assessment, that is irrelevant. But in terms of the criteria—forgive me on this one; give me a bit of leeway—

ACTING CHAIR: Sure.

Dr Woinarski: Thank you. We have a population census of Australia next week. We have them every five years. Government invests considerable money in such things, recognising that they are important and necessary for strategic planning. For wildlife, we are far less good. In Australia we have no real integrated biodiversity monitoring. We cannot measure trends and we cannot associate them with any measures of our progress as a nation. We are very poor at population monitoring of wildlife in Australia. If we cannot do that now, to go back and try to unravel the very sparse historical record will be even harder. It is likely that the koala was widespread, at relatively low population densities, across much of eastern Australia at the time of European settlement. It is likely that the population now is substantially less than that. My guess would be perhaps half, perhaps a third. But it is very difficult to tell.

ACTING CHAIR: I am interested in that. The one thing that was counted was skins. If there were one or two million a year put on the international market, how can you say that 200,000 was half or so of the koala population back then?

Dr Woinarski: This is getting into speculation beyond the immediate obligation of our committee. Hypotheses have been put forward that there was a population increase of koalas following the depopulation of Aboriginal people across large areas of Australia on account of hunting. I am not sure whether there is much evidence for or against that. But it is possible, as we have heard from Peter Menkhorst previously, that the koala has been characterised in at least parts of its range by having significant population fluctuations. So it may well have been that, at times of unusual abundance of koalas, a very large hunting pressure could be sustained for short periods.

ACTING CHAIR: I must give my fellow senators a go. The historic population would be the historic population, regardless of Aboriginal impact on the koala? I am talking about the natural population of koalas.

Dr Woinarski: I do not want to be at all evasive—that is not what we are here for—it is just simply an area about which the data are just far too few, other than the total number of skins that were taken. I do not think we can get a good estimate of the total population of koalas before European colonisation. Indeed, it is not relevant under the act, under which we deal.

ACTING CHAIR: There has been some speculation about the potential for disease vectors, such as those affecting the Tasmanian devil or the Tasmanian platypus or a number of other species, to impact on koalas in the future. As far as your committee is concerned, do you think that is an irrelevance in assessing the status of the koala?

Prof. Harrison: That is in no way irrelevant. It is certainly something that we are concerned about and assess as part of the process. I will ask Dr Taylor to talk about—

Dr Taylor: We certainly do consider it as a threat; we just cannot quantify the threat.

ACTING CHAIR: If you cannot quantify it—

Dr Taylor: Quantify it.

ACTING CHAIR: If you cannot quantify it, do you not then take it into account as part of the moderate precautionary principle?

Dr Taylor: We took it into account as one of the many threats that we do recognise as affecting koala populations, certainly populations in Queensland, where disease may be more of an issue than it currently is in Victoria where population growth has certainly not been affected by, at least, the chlamydia, which is already present in Victoria and has been for quite some time.

Senator McKENZIE: I have no questions.

Senator DI NATALE: That was a thorough exercise, Senator Brown. You asked most of my questions.

ACTING CHAIR: I will come back again just for a moment. Tell the committee about the national management plan, if you would.

Prof. Harrison: During the process of this most recent assessment of the koala as a nationally threatened species, the National Koala Conservation and Management Strategy was being developed. As part of our assessment process we were mindful of that and were briefed on its development. We feel that it is a positive step in creating an overarching strategy that could be used to enhance management of the koala by trying to nationally coordinate information, resources, implementation of the strategy and also to coordinate in some research, hopefully having sufficient long-term resources that would go into monitoring of key populations. That monitoring should feed back in an adaptive management framework into the strategy so that the strategy can be continually reappraised and therefore evolve over time to become more effective.

We looked at this as the potential option as a plan of management under the act that might qualify the koala as conservation dependent. We discussed this at great length and decided that at its present stage of development it lacked sufficient detail for us to be confident that, even though the local or regional populations that were most threatened have been identified, how it would be implemented to act in a conservation dependent manner would ensure that the decline in those populations would be halted and recovery enabled. We considered it, as we said, a positive first step to provide an overall framework. It recognises the importance of the koala and the importance of the threats that are operating in different ways across its jurisdiction, and we would hope that an implementation strategy could be developed which would allow it to truly effective and focused on those populations in dire need of better management.

ACTING CHAIR: Just going back to the criteria that are used for your assessment: they come, I think you said, from IUCN. You were quite right, Dr Woinarski, that the numbers are 10,000 or, in criterion 2, 20,000. How does that differentiate a lungfish from a passenger pigeon? I am using that number because there are probably some thousands of lungfish, and there has been in this country for many thousands of years. But there were millions, if not billions, of passenger pigeons and suddenly they were gone. The number limitations on this seem to me to be contrary to the reality of the natural world.

Dr Woinarski: The IUCN criteria were developed over several decades by leading conservation biologists across the world, and they were designed to capture all manner of species that were threatened with extinction—across plants, invertebrates, trees, marine species and the like of differing longevity, of differing initial population size and of differing severity of threats. To an extent, that is why there are five different criteria which are attempting to capture different types of those threatened species. For example, your passenger pigeon example would very much come under criterion 1, where there has been a marked reduction in a limited time period in the total population, regardless of what the initial total population was. Certainly there were very many millions of them in the 1840s. By 1921, there were none left. It would certainly have triggered criterion 1 to be recognised as threatened, whereas the lungfish is much more restricted in range. It has not shown change in population size. The particular criterion which it would trigger would be the very localised range and perhaps small population size. So it would still be recognised as threatened but under a very different umbrella.

ACTING CHAIR: There is just one thing that is going to trouble me, because nobody seems to know. Dr Taylor, you might be able to answer this. Is this committee to assume that there is no significant genetic diversity in koala populations in Australia?

Dr Taylor: There is significant genetic diversity within populations. I am sorry; I am not sure I understand the question.

Dr Woinarski: He said 'divergence', I think.

Dr Taylor: Oh, divergence. Sorry. There is a lot of evidence for divergence due to more recent anthropogenic impacts. There is not a whole lot of really convincing evidence that there is distinction over a longer time frame. But I would really like to see some more sampling and more populations analysed.

ACTING CHAIR: But, without that, can you assure the committee that the resilience of a koala in central western Victoria is no less than that of a koala in South-East Queensland?

Dr Taylor: So you are talking about genetic diversity within populations that would protect against disease?

ACTING CHAIR: I am just talking about the resilience of those two populations.

Dr Taylor: No, I think it would be fairly generally agreed that a population with lower genetic diversity has lower evolutionary potential and lower potential to adapt to new challenges. So in that case, yes, I would say that in the longer term there could be unforeseen threats over the horizon that might impact koalas in Victoria more than they would elsewhere. But we cannot speculate on that particularly, because when a population goes through a bottleneck where the numbers go down to small numbers and then expand again, as has happened in Victoria, it

is really a genetic lottery as to what genes they retain. They may have retained some incredibly useful genes that, just by chance, are still within the population, or they may have lost some genes that would have been very useful. We do not know. We really do not know much about functional genetics of populations. When we look at the genetics of populations, we use neutral genetic markers which really just tell us about population history and population relationships. It is not really telling us anything directly. We do not even know anything about disease genes that might control for disease resistance, for example. Even though we might know a lot about the diseases or pathogens that impact populations, we do not know anything about the genes that help a koala to be resistant to that disease challenge or what might make them susceptible.

ACTING CHAIR: But, if I were to assume that koalas in South-East Queensland were more robust against something over the horizon than a koala in central western Victoria, would I be wrong or would I be right?

Dr Taylor: Probably that would be a reasonable thing to say.

Prof. Harrison: But we cannot be certain, because we do not have scientific evidence, and under the act we require some scientific evidence to prove that.

ACTING CHAIR: But, if I took the precautionary principle, I would assume that to be the case.

Prof. Harrison: Yes.

Dr Taylor: Yes.

Dr Humphreys: If I may add to that, though, it is true that *Homo sapiens* went through an extreme bottleneck not all that many thousands of years ago, and there is more diversity in Africa than there is outside Africa.

ACTING CHAIR: Yes.

Dr Humphreys: So you can go through bottlenecks and still maintain genetic diversity sufficient to have large populations.

ACTING CHAIR: But 70,000 years might be different to 70 years, mightn't it?

Dr Taylor: Exactly, yes.

Dr Humphreys: You start off with a degree of genetic diversity after a bottleneck. I had better hand over to my genetics colleague.

Dr Taylor: The population size is now large enough that there is probably not any further loss, and it probably did expand quite quickly from the bottleneck, so that will determine how much genetic diversity is retained. If a population expands quite quickly after going down to small numbers, it will retain more diversity than if it went—

ACTING CHAIR: Can I put this way: we are hearing about isolates—small populations of koalas—continuing to go extinct because they are fractionated in north-east New South Wales and southern Queensland. Does that matter no less than an equivalent number of koalas being taken and translocated out of Victoria or lost from the population due to a local bushfire, for example?

Dr Taylor: You could certainly do a prioritisation if you wanted to identify genetically important populations across the range of the species. But that exercise has not been done. Genetic diversity would be one of several criteria that are normally used to identify and recognise important populations, but we have not been through that process as a committee.

ACTING CHAIR: But do you think there are genetically important populations of koalas?

Dr Taylor: If you had to weigh up two different populations and say one is more important than the other, that is definitely a criterion we would use to identify one as being more important than the other.

ACTING CHAIR: Finally, we have had quite recent evidence that koala populations may be bigger in logged areas of forest than they are in unlogged areas of forest. Do you have evidence to that effect?

Prof. Harrison: Is that evidence that was presented today?

ACTING CHAIR: Yes, by Forests NSW.

Dr Woinarski: That is evidence that was new to us as well. In the broad scheme of our evaluation, it would not have made a substantial difference.

Senator DI NATALE: Being new to this area, I am shocked at how poor the data is. This will not necessarily be met with applause, but that is not necessarily from the point of view of the koalas. If we have got such poor data for koalas, how on earth do we keep track of less iconic species? And what do we need to do to improve that? What are the tools at our disposal that allow us to improve that monitoring?

Prof. Harrison: Thank you for that question. It is very relevant and very important from a number of points of view. In relation to koalas, we were not shocked, but we were disappointed that not a lot had changed in terms of new information and certainty associated with abundance and trend data in populations across the koala's range when we did this latest assessment. That was disappointing. One of the key issues that we have highlighted very strongly in our advice to the minister and in our letter to the minister is that we need national coordination of this process; it is fundamental to future and better management. But the koala, as an iconic species, should be something that we know much more about. And what you have highlighted is that for all these other species, which are not iconic and therefore not recognised by the Australian public and by people around the world, we are in an even worse position.

What the committee continually comes up against is data deficiency problems associated with assessing species. And even for species which, like the koala, have a large range, we have pinpricks of information across the range, but this is insufficient to give us confidence that we really understand the overall trends clearly enough to make these assessments simply. So what we have suggested as a committee numerous times is that there needs to be better national coordination of the information. We are very aware of the tremendous amount of excellent science that is going on amongst our research networks, including long-term monitoring, but it is not nationally coordinated. We are also very aware of information about the current listed threatened species, of which there are many. But again, this is not nationally coordinated. It is a process that we are extremely concerned about and have tried to highlight in many ways throughout the years. John, would you like to add to that?

Dr Woinarski: Your question is entirely pertinent to this case and generally as well. It is not only the lack of national coordination and integration of the monitoring of our biodiversity; it is also that there are very serious gaps. There are many species for which we have no trend data at all. We think that if we are serious about conserving biodiversity in Australia and if we are serious about charting the trends in our nation, its progress, its value and its morality, we should be ensuring that we are capable of monitoring how our biodiversity is faring. In this sense, it is odd that the WWF has coordinated across the world a Living Planet Index, which includes a whole series of integrated monitoring data for species across most nations in the world. But they have remarked that one of the places where they have had least information is Australia. So they have found it easier to coordinate monitoring of biodiversity across European countries than in Australian jurisdictions. We think that is not a very optimal situation.

Senator DI NATALE: Would that national coordination look like some sort of cooperative research institution? How do you envisage that that coordination occurs?

Dr Woinarski: Feasibly, it could be a single institution but, alternatively, it could simply be catalysing or facilitating role by the Australian government, trying to coordinate jurisdictional state agency monitoring data and trying to ensure that it is done in an integrated and coordinated manner. It is also not simply state agencies but a range of conservation NGOs are also doing substantial and very good monitoring. So it does not necessarily need to be a single body but as long as the facilitation and catalysing is done.

Senator DI NATALE: At the moment, that work is happening all over the place in fieldwork and in lab settings, and the whole thing is completely uncoordinated, and you rely on individual submissions from individual entities to make your assessments? There could be substantial work that is being done that you do not see.

Dr Woinarski: I think that through our networks we know if it is being done. But, you are right, it is essentially haphazard and ad hoc, and that is seriously constrains many of our assessments for many species that we deal with. It also makes it difficult for us to not only assess whether species meet listing criteria but also assess the extent to which recovery plans are actually working and assess whether your investment in land management is actually achieving any conservation good. Our line is very much that we should be assessing our performance as land managers and the best way to do that is to look at the outputs in terms of the trends that are resulting in biodiversity, and ensuring that there is a feedback loop so that we can continually refine and make better our management.

Senator DI NATALE: There is no broad overview to identify specific gaps in particular species? Is that assessment made by anybody in particular or is it just when a problem comes up?

Prof. Harrison: We assess it routinely as part of our process with the Threatened Species Scientific Committee. The departmental secretariat provides some of the summary background information for us and we add to that through our networks to make sure that all of the available information, as it was with the koala, is assembled in a rigorous fashion. Almost inevitably for each entity that we look at, there are certain and obvious gaps that we see that could be easily rectified with a very small investment of funds to make the difference between a truly meaningful assessment and one which relies on the information that is available that is clearly inadequate. It is a major problem.

Senator DI NATALE: If that happens, at the moment you do not have any capacity to commission or request—

Dr Woinarski: We provide advice.

Prof. Harrison: We provide advice to the minister and that is our role.

Senator DI NATALE: Okay. That is worrying but interesting.

Dr Woinarski: Can I add one comment, that it is ironic that the best coordinated trend information for Australian biodiversity is through the fisheries status reports. Every year there is well coordinated information about the status of Australian fish stocks, including in many cases on by-catch as well. There is nothing comparable for Australian terrestrial biodiversity.

Senator DI NATALE: Why is that the case? Is it because of the industry?

Dr Woinarski: It is because of the industry and because there is an economic incentive to do so.

Senator DI NATALE: So we should start harvesting koalas!

Dr Woinarski: Not quite. Your inquiry is in part about the validity of listing of koalas as threatened or not. But I make the point that it is by no means a Holy Grail to be listed as threatened. In fact, it is very much a situation we would like not to be in for most species. It is sort of a house of last resort and we would rather not that. The act as it stands places threatened species as a matter of national environmental significance. As you are aware, the act is being reviewed currently. We have run into situations through many of our other assessments which include such situations as species which are of extreme Indigenous significance or other cultural significance as well and there is no clear mechanism within the act for recognising either culturally significant or evolutionally significant species. There is a sort of a provision under section 190 which allows that but we would, I think, recognise that there should be more than threatened species which are covered by the act and that we should be having specific provisions, if it is possible, to ensure that not only threatened species but culturally significant and evolutionally significant species are also afforded relevant protection. We do not want them to fall into the situation where it is not until they are threatened that they are being protected. We would like to be more proactive and strategic about recognising our major cultural and evolutionary icons.

ACTING CHAIR: Thank you for that. That is really important. Finding myself unexpectedly in the chair, I am going to indulge myself with the last question, which is irrelevant. How did we let the Norfolk Island white-eye go to extinction this year, listed?

Dr Woinarski: The Norfolk Island white-eye probably became extinct sometime over the last two decades but was listed or recognised as extinct I think this year. It is one of a series of about half a dozen bird species which have become extinct Norfolk and similarly on Lord Howe as well. That one was driven largely by rat predation. I will speak as an individual, if I may, rather than representing the committee. The act and the provisions of the act are better at regulating direct human pressures such as hunting and taking of particular species or land-use determinations preventing mining rather than they are about providing protection against indirect threats such as the effects of feral animals. That is not really our fault per se but is an indirect consequence of actions. So most of the species which have become distinct in Australia over the last four or five decades would not necessarily have been well protected by the act because there is that difficulty in protecting against such things as feral animals.

ACTING CHAIR: Thank you very much for coming and appearing before the committee. We will take all your information and comments into consideration and wish you well with your work.

Dr Woinarski: Thank you.

ACTING CHAIR: I declare the hearing closed.

Committee adjourned at 16:25