Cynulliad Cenedlaethol Cymru
National Assembly for Wales

Cofnod y Trafodion
The Record of Proceedings

Y Pwyllgor Newid Hinsawdd, Amgylchedd a Materion Gwledig

The Climate Change, Environment and Rural Affairs Committee

10/11/2016

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Others in attendance

Dr Gareth Enticott	Prifysgol Caerdydd Cardiff University
Dr Neil Paton	Cymdeithas Milfeddygon Prydain British Veterinary Association
Yr Athro/Professor Rosie Woodroffe	Y Sefydliad Swoleg Institute of Zoology

Swyddogion Cynulliad Cenedlaethol Cymru yn bresennol
National Assembly for Wales officials in attendance

Alun Davidson	Clerc Clerk
Elfyn Henderson	Y Gwasanaeth Ymchwil Research Service
Rhys Morgan	Dirprwy Glerc Deputy Clerk
Katie Wyatt	Cynghorydd Cyfreithiol Legal Adviser

Dechreuodd y cyfarfod am 09:33.
The meeting began at 09:33.

Cyflwyniad, Ymddiheuriadau, Dirprwyon a Datgan Buddiannau
Introductions, Apologies, Substitutions and Declarations of Interest

[1] **Mark Reckless:** Bore da, good morning, and welcome to the Climate Change, Environment and Rural Affairs Committee. I'm grateful to you both for coming in to give evidence. There is translation available on channel 1, if needed, on your sets. And, also, can I just note we've had apologies from Jayne Bryant, Vikki Howells and David Melding? And I welcome Paul Davies to the committee as a substitute today for David Melding.

Twbercwlosis mewn Gwartheg yng Nghymru
Bovine Tuberculosis in Wales

[2] **Mark Reckless:** If I could begin, could you share with us your views on the efficacy, or otherwise, of Welsh Government policy to date on seeking the eradication of bovine TB, and managing it in the meantime?

[3] **Professor Woodroffe:** Certainly. Well, I think there was a piece, a year or so ago, on the BBC Radio 4 *Today* programme, in which there was an interview with the Chief Veterinary Officer for Wales, followed by a head-to-head with the head of the British Cattle Veterinary Association, and it was very striking that, when asked to criticise something to do with badger vaccination, the head of the British Cattle Veterinary Association cut across the interviewer and said, 'No, no, before I answer that question, I just want to say Wales is the envy of Britain on this.' Because the way in which the veterinary officers you have here have got a handle on, and come to grips with, cattle TB has been exemplary. It's been falling, although, in recent times, the number of cattle slaughtered has gone up. It's really hard—and Gareth can add his views on this, but in my view it's very hard—to judge the success of a policy by the same method as you are using to pursue that policy. So, if you're, for example, taking a more aggressive approach, you're slaughtering more cattle in each herd and your number of affected herds is going down, nevertheless you will see more cattle slaughtered. So, I think it's been successful. TB goes up and down, and it does the same thing in other parts of Britain, but I think a great deal has been achieved in Wales in heading towards TB control.

[4] **Dr Enticott:** I think I'd add two things. On the one hand, TB has the same problems in Wales as it has in England and in other countries, in that

it's a political disease, and so what happens to it and how it's managed reflect the politics of the time. It's no different in Wales than it is in England. However, I think in Wales, certainly over the last 10 years, what we've done or what the Welsh Government have done are more individual targeted approaches, whereas DEFRA have tended to adopt more generalist approaches. Just a couple of examples of that: the ITA—the intensive treatment area—out in west Wales over 10 years ago now was the first attempt, really, to try and give farmers specific advice on biosecurity. The approach in England has really been just to send out leaflets and say, 'This is what you can do', which tends to make things worse. Then again, a more recent approach, Cymorth TB, is, again, a more specific, targeted approach. I think DEFRA have probably learned from that, but Wales are ahead of the game in that respect.

[5] **Mark Reckless**: Huw, you had a point.

[6] **Huw Irranca-Davies**: Thank you, Chairman. When we look at the figures, looking back to 2009, over 13,000 cattle slaughtered and nearly 1,300 new herd incidents. The herd new incidence has been on a downward trend, with some little variation, but consistently down to 722 new herd incidents. But it's gone back up in terms of cattle slaughtered—back to nearly 9,500. But your argument would be that the number of cattle slaughtered is not evidence that the policy is failing. The evidence should be in that number of herds with new incidents, that that is declining.

[7] **Professor Woodroffe**: Yes, I should preface what I say, that, whilst I'm a disease ecologist, I am primarily a wildlife ecologist, so, you know, I'm not the biggest and best expert on cattle TB, except as it applies to badgers; badgers are particularly my expertise. But, yes, with that caveat, I think that what's happened is that—and, you know, reading the consultation document, there have been areas where the policy has been very successful, and it's increasingly homing down on problematic, chronically problem herds where you may have more reactors. I haven't looked into it to see whether they are—. It must be that they are slaughtering more cattle per herd if you're slaughtering more cattle, but there are fewer affected herds.

[8] **Huw Irranca-Davies**: Which was, interestingly, I think, Professor John Bourne's argument, that you needed to go deep into the cattle herds where there was a high level of incidents in order to hit it hard and knock it back.

[9] **Professor Woodroffe**: Absolutely. A lot more use of gamma interferon

testing, for example, which is a more sensitive but also less specific test, which is a good idea if you're trying to control disease.

[10] **Mark Reckless:** Professor Woodroffe, given your background with work that came out of Lord Krebs, could I just explore an issue with you around the Krebs report, the King report and then the 2011 DEFRA document? If you could perhaps start by saying whether I've characterised it correctly in my understanding. The King report would be suggesting that there was efficacy in badger culling, but the Krebs report and the committee there were saying that that wasn't case because once you take into account the negative effects on infection of, I assume, disturbing the badgers through culling and making them go to a wider area, it wasn't positive. But then DEFRA came back in 2011, and said, while that may be true in the near term, for a year or 18 months, on a longer view, the positive impacts of badger culling on bovine TB instance were greater, and those negative effects tended to be complete within 18 months. So a) is that a fair characterisation, and b) why didn't that come out during the randomised badger culling trial, given Lord Krebs got this under way in 1996 and it didn't report until 2007?

[11] **Professor Woodroffe:** Well, let me first tell you, yes, Krebs reported in 1996, so what you're talking about isn't the Krebs report. You're talking about the final report of the independent scientific group on cattle TB, which was chaired by Professor John Bourne and that was mentioned previously. So, the views of Professor Sir David King, who was the Government's chief scientist at the time, was that he looked up what we had done—I was a member of the independent scientific group on cattle TB—and what we showed at that point was that, while culling was under way, we saw a relative reduction in cattle TB in the areas where widespread badger culling had occurred. But we also saw an increase on adjoining land. I can give you an explanation of the intimacies of badger ecology and why that happens, but the point is that we saw less TB inside the culled areas but more TB on adjoining land. Those roughly balanced each other out, to the point where, at the end of the randomised badger culling trial, we had essentially achieved nothing in terms of TB control. We achieved an enormous amount in terms of understanding the outcomes of culling, both of badgers and cattle.

[12] Now, what happened after the end of that, was that monitoring of those areas continued through the work of Professor Christl Donnelly, who was also a member of the ISG. What that showed was, after culling ended, there was an increase in the benefits of culling inside these large culling areas, but the harmful effect on adjoining land disappeared. What that means

if you sort of mush together all of the beneficial effects and the harmful effects, is that the projection is, that for a perfectly circular culling area of about 150 square kilometres, you would expect, on balance, after nine years, about a 12 per cent relative reduction overall in cattle TB, over nine years. So, if, in those nine years, you would expect, with no culling, to have 100 incidents of cattle TB, you would have 88 in that nine-year period. So, it's not a very big overall reduction, but it is a net reduction. But if you break that apart, the benefit is all inside the area that's culled. The adjoining land never saw any benefit. Although we saw the biggest detrimental effect was early on during culling, the harmful effect disappeared after culling ended but it never turned into a benefit. So for the farmers on adjoining land, it's all cost; they see no benefit from culling whatsoever.

[13] Now, just to quickly deal with the King report, what Sir David King did, was he looked at the evidence that there was a beneficial effect inside. He said, 'Yes, yes, we believe that'. He looked at the evidence that there was a detrimental effect outside, and his committee said, 'We don't believe this,' and they came up with a variety of reasons why they didn't believe it, all of which have been addressed. We subsequently met with Sir David and resolved a lot of those differences. I should say that his report was censured by the top scientific journal *Nature* because he basically cherry-picked. He said, 'We like this result, but we don't like that result.' The evidence is there, and it was published in top journals. The evidence was there to show that there really was this harmful effect, but it didn't persist. It took several years to disappear, and it never turned into a benefit.

[14] **Mark Reckless**: Thank you. I find that a very helpful explanation. I think we now want to address the Welsh Government's proposals. We had a statement from them three weeks ago. So, Paul, did you just want to come in on that point before I move to the—?

[15] **Paul Davies**: Yes, Chair, if I may. Before I ask my supplementary question, for the record, I just need to declare that my parents-in-law's farm has been affected by bovine TB over the last 15 years.

[16] **Professor Woodroffe**: Sorry to hear that.

[17] **Paul Davies**: I just want to take you back to the figures and the number of new incidents we've seen as far as bovine TB is concerned. Do you accept, though, that there is a correlation between the number of herds and, obviously, the number of new incidents? Because if you look at the figures, in

1996, for example, there were over 20,000 cattle herds, and now, in 2016, there are only 11,500 cattle herds? So, do you accept that there is a correlation as far as those figures are concerned?

09:45

[18] **Professor Woodroffe:** So, you're talking about just the number of cattle herds, full stop.

[19] **Paul Davies:** Absolutely, yes.

[20] **Professor Woodroffe:** Again, I have to preface what I say, and Gareth—[*Inaudible*.]—by saying, I'm a TB badger ecologist, but one of the main risk factors for TB in cattle is herd size. So, an individual cow in a large herd has a higher risk of getting TB than an individual cow in a small herd. It's not just that there are more of them so the herd is more likely to get TB; it's that individual cattle have a higher risk in large herds. Now, certainly, in my study areas in Cornwall, over time, we can see, say, one goes out of business, the land is bought up by a neighbour and we're seeing a trend towards fewer larger herds. So, that is going to increase the TB risk, and so, in trying to combat this disease, it's like swimming upstream, because the trend within the industry is fewer larger herds and yet the TB risk goes up with herd size. I don't know if that helps inform you in your question at all.

[21] **Paul Davies:** I think the point I'm trying to make is that, of course, you're trying to argue that the incidence, as the figures show, has come down—

[22] **Professor Woodroffe:** I see. It's gone down.

[23] **Paul Davies:** —but the argument I'm putting forward is, of course, that would be the case, because the number of herds has come down.

[24] **Professor Woodroffe:** Because there are fewer herds. No, because the risk per herd goes up. So, it's dropping, I think, despite—. I don't think it's that there are fewer—.

[25] **Paul Davies:** So, your view is that the risk increases.

[26] **Professor Woodroffe:** The risk per herd and the risk per animal in each herd goes up with herd size. I don't think that the decline that's been seen is

due to there being fewer herds. I don't know, Gareth, if you want to add anything to that.

[27] **Dr Enticott**: I don't know. I think the lesson is, really, a lot of the statistics that are used in epidemiology can be quite confusing when you use them in isolation.

[28] **Professor Woodroffe**: And there has been a move, I should say—there's certainly been a lot of pressure on DEFRA—to present these data as incidents per herd for that sort of reason.

[29] **Paul Davies**: Okay. Thank you, Chair.

[30] **Mark Reckless**: Good. Simon.

[31] **Simon Thomas**: Byddaf yn gofyn yn Gymraeg. Cyn gofyn beth roeddwn i eisiau gofyn, jest i adlewyrchu'r drafodaeth rŷm ni newydd ei chael, fe fyddai yn sicr yn help, efallai, i weld y ffigurau hyn wedi'u mapio yn ôl risg, yn ogystal ag yn ôl nifer. So, mae hynny'n help. Nid ydych chi'n cael y cyfieithiad?

Simon Thomas: I'll ask in Welsh. Before I ask what I wanted to ask, just to reflect the discussion that we've had, it would certainly help if we could see these figures mapped according to risk, as well as according to the number. So, that would be a help. Are you not getting the translation?

[32] I don't think they're—

[33] **Professor Woodroffe**: I'm not getting the translation, sorry. I was told not to touch anything.

[34] **Mark Reckless**: Simon, is that a request for our witnesses or for our research staff?

[35] **Simon Thomas**: It was a comment [*Laughter.*] It was a request for research staff. Anyway, it's by the by.

[36] Rwyf i jest eisiau deall ar hyn o bryd, gyda chynigion Llywodraeth Cymru—. A ydy hynny'n dod trwyddo'n glir, nawr? Popeth yn iawn?

I just want to understand, with the Welsh Government's proposals—. Is that coming through clearly? Everything okay?

[37] **Professor Woodroffe:** Yes, thank you.

[38] **Simon Thomas:** Rwyf i jest eisiau deall y gwaith rŷch chi wedi'i wneud, a chymharu, efallai, Seland Newydd hefyd, a'r ffaith bod y Llywodraeth ar hyn o bryd yn cynnig bod yna dair ardal statws TB, i bob pwrpas, yng Nghymru—isel, canolradd ac uchel—a bod yna wahanol ddulliau'n cael eu defnyddio yn y gwahanol ardaloedd hynny. A ydy hynny'n rhywbeth rydych chi wedi'i weld yn cael ei arddel mewn gwledydd eraill? Ac, a ydych chi'n gallu gweld bod hynny'n ymateb rhesymol o ystyried mai'r amcan tymor hir yw symud at statws rhydd o TB yn llwyr?

Simon Thomas: I just want to understand the work that you've done, and comparing with, perhaps, New Zealand as well, and the fact that the Government at present is proposing that there are three different TB status areas in Wales—low, intermediate and high—and that there are different methods used in those areas. Is that something that you've seen being espoused in other countries? And, do you see that that is a reasonable response given that the long-term objective is to get to an entirely tuberculosis-free status?

[39] **Dr Enticott:** The story in New Zealand and Australia is that you regionalise, you zone and you have different regulations in each area. The story from Australia is that that was already in place before they really started rolling forward with TB eradication, and so farmers were used to that. It meant that they could, in the Northern Territories, which was the last area, really hit the problem really hard and that's what really got rid of the problem in the end. So, yes, by having these different regulatory systems in different states, that really helped. Again, in New Zealand, by dividing up the country into different kinds of movement-restriction areas, infection areas—again, that kind of helps farmers understand where those risks are. So, it's not just from a regulatory perspective, but it also helps farmers' mentalities.

[40] There was some interesting research published quite recently from New Zealand, which showed that the risk movements matched the zones, if you like. So, it had had an effect on farmers' practices—not a complete effect, so there was still a lot of work to be done in terms of trying to encourage farmers to adopt the least risky movement practices, or cattle-management practices, but dividing countries up like that has an effect on people's working practices. So, for Wales, I guess part of the problem is that Wales is a lot smaller than Australia and New Zealand—

[41] **Simon Thomas:** I had noticed.

[42] **Dr Enticott:** —and it also has England butting up right against it and cattle movements cross between those countries, and policy is devolved as well. So, different things can be happening in different countries. So, on the face of it, it's a good idea, and it can also mean that you can declare eradication sooner in those low-risk areas and say, 'Look, we're making progress.' Again, going back to Australia, by the time they had started their eradication programme seriously, it really wasn't a problem in a lot of the southern states, so they were ahead of the game. They could also demonstrate that they'd eradicated other diseases and they were successful in what they were trying to do. We probably don't really have that to fall back on, either in Wales or in England. But, upon the face of it, regionalisation is a good thing.

[43] **Professor Woodroffe:** If I can add to that, I think in terms of badger management, it's a good thing. If you look at the map that's presented in the consultation document, it's pretty clear that what evidence there is suggests that the involvement of badgers in north Wales, for example, is much, much less than it is in south Wales. So, I think that you wouldn't necessarily want to be doing anything about badgers in north Wales if a lot of the TB in those areas isn't involving them, except to do your hardest to make sure it doesn't get into them. The same is the case within the low-risk area in England, where, broadly speaking, it seems to be that most of the infection is coming in from outside and therefore you'll manage it in that way to try to stop the disease from spreading to new areas. So, I've been quite impressed by that approach, yes.

[44] **Simon Thomas:** Beth, wedyn, am y dulliau gwahanol fydd yn cael eu defnyddio yn y gwahanol ardaloedd yna? Rydych chi newydd grybwyll mai un o'r pethau sy'n deillio'n syth o hyn yw y bydd yna, efallai, modd lladd moch daear mewn un ardal ond ddim mewn ardaloedd eraill—nid lladd ar raddfa eang, ond yn benodol iawn. Felly, mae yna wahaniaeth yn mynd i fod rhwng gwahanol ardaloedd. Eto, a ydy hwn yn rhywbeth sy'n taro tant gyda'r hyn

Simon Thomas: What, then, about the different approaches that will be used in those different areas? You've just mentioned that one of the things that stems straight from this is that it might be possible to cull badgers in one area but not in another area—not a broad-ranging cull, but very specific. So, there will be a difference between the different areas. Again, is that something that aligns with what's happening in other countries? Specifically, as Mr Enticott said at the

sy'n cael ei wneud mewn gwledydd eraill? Yn benodol, efallai, fel yr oedd Mr Enticott wedi dweud ar y cychwyn, mae DEFRA wedi bod yn llawer llai parod na Llywodraeth Cymru i ddosbarthu gwybodaeth am fioddiogelwch a phethau felly. A ydy hyn yn golygu bod y Llywodraeth yn gallu arfogi ei hunan i fod yn llawer mwy pwerus a llawer mwy ymyrrus, mewn ffordd, mewn ardaloedd, i sicrhau fod bioddiogelwch, yn yr ardaloedd uchel yn arbennig, yn cael ei ddiogelu? Felly, rydym yn ehangu o'r profiad y cawsom yng ngogledd sir Benfro, efallai.

start, DEFRA has been far less willing than the Welsh Government to distribute information about biosecurity and those issues. Does that mean that the Government can arm itself to be much more powerful and much more interventionist, in a way, in areas to ensure that biosecurity in those high-risk areas in particular is secured? So, we're moving on from the experience we had in north Pembrokeshire, perhaps.

[45] **Dr Enticott:** So, if I understand your question correctly, about biosecurity, it could encourage farmers elsewhere in lower-risk areas, or Welsh Government could encourage those farmers more to use—

[46] **Simon Thomas:** It empowers Welsh Government to do that more successfully, I think, is what I'm saying, rather than more. Just more successfully, more targeted.

[47] **Dr Enticott:** Okay. I think the problem with biosecurity is just the word 'biosecurity', in that it means so many different things to different people. There's a general problem about trying to encourage farmers to adopt that, because it means so many different things, like I said. On the one hand, a lot of people just refer to cattle movements as a form of biosecurity, and it probably is the most important element of biosecurity, and those regulations around cattle movements would probably apply—you would probably want them to apply across the board. In terms of trying to encourage farmers to adopt more biosecurity in the lower-risk areas, the problem you've got there is a perception of risk: 'Why should I do this? There doesn't seem to be much point, nobody is really going down with TB.' The problem in high-risk areas is a general sense of fatalism around biosecurity, in that farmers think, 'Well, I'm going to get the disease. I'm going to get it whatever I do. What is the point?' Now, you can try and work with those farmers on a one-to-one basis, and the veterinary profession are really important in doing that, but that's expensive. It's a lot more expensive than general, generic advice. So, I don't

really think that regionalisation necessarily assists with those problems. Those are much broader social challenges for Government.

[48] **Mark Reckless**: When you're a farmer in a low-risk area and you have this lower perception of risk, does that extend to not bringing cattle in from high-risk areas, because you're aware they're high risk and that's not something you should do?

[49] **Dr Enticott**: That's interesting, and the answer is, 'Yes and no'. There's plenty of evidence to show high-risk movements of cattle coming into Anglesey and other areas of north Wales. What's interesting is, when you get a breakdown in those low-risk areas, what happens to those farmers around that, and there can be a lot of social pressure and a lot of blame on that farmer for bringing that in and threatening other farmers in the location.

[50] **Mark Reckless**: Paul.

[51] **Paul Davies**: Thank you, Chair. Just on the regionalised approach, obviously, the Welsh Government now is moving towards a much more regionalised approach. I just want to ask you about the New Zealand experience, because it seems to me that they're moving away from a regionalised approach—they're moving away from the zone approach, as they call it. Are there any lessons we can learn from that?

[52] **Dr Enticott**: Part of the reason for that is the level of disease in New Zealand is so low now, the disease really only exists on the west coast, which is on the south island, in the kind of hotspot areas around there. They only have 35 breakdowns a year and they're pretty much all there; if they're not there, it's because somebody's brought some cattle from there and brought them up to the north island.

[53] **Paul Davies**: Hence the change, then.

[54] **Dr Enticott**: Yes.

[55] **Paul Davies**: Thank you.

[56] **Mark Reckless**: Huw, then Jenny.

[57] **Huw Irranca-Davies**: Two very short supplementaries on this. It's interesting, the interplay between the regional approach and risk-based

trading. The proposals that have come forward are for voluntary risk-based trading. My understanding is that, in Australia and New Zealand, it was hardline, and in Australia, they had large markets, even within a high-risk area. You could trade within that high-risk area, and it was sufficiently large that there was economic value within it, even though they were closed within it. It probably suits Wales that it's a voluntary one, but it still leaves open that slight risk that suckler calves or whatever suddenly find their way in. Do you think it's appropriate, within the proposals we currently have, to have a regional approach balanced with a voluntary risk-based trading approach?

[58] **Dr Enticott:** Two things—Australia's was a regulatory approach, so, like I said before, the states had different existing rules already on movements. In New Zealand, the risk-based trading scheme is voluntary, and was created by farmers, and this is the key and the most interesting difference, as well, with New Zealand. So, the story is, in the Hawke's Bay area, in the early 1990s, a group of farmers got increasingly annoyed with other farmers bringing in cattle that couldn't be identified. They didn't know the history of those animals, and it was those farmers and an auctioneer, in particular—

[59] **Huw Irranca-Davies:** It was self-enforced.

[60] **Dr Enticott:** —who, in a market, would go around labelling pens with cattle in saying, 'These are from an infected herd from two years ago'. Anyway, they had status declaration cards—

[61] **Huw Irranca-Davies:** So, it flags up the importance of farmer buy-in to this.

[62] **Dr Enticott:** Exactly.

[63] **Huw Irranca-Davies:** The second short question I have is: would it be your view that individual farms should be able to work their way out of their classification in a region in the way that it was done, as I understand, in Australia and elsewhere? So, even if you're in a high-risk area, if you've got a clean farm and they have proven that they're clean and the testing is showing that they're clean and they're doing the biosecurity, they should be able to be ring-fenced and for it to be said, 'Well, you're now out of that, you can freely engage in the wider area.'

[64] **Dr Enticott:** People would argue about that, because they would say if

they're in a high-risk area, they're in a high-risk area, and the history of the herd is one thing, but—

[65] **Huw Irranca-Davies:** But then what's the incentive for them to—?

[66] **Dr Enticott:** Exactly.

[67] **Huw Irranca-Davies:** What would your view be?

[68] **Dr Enticott:** The whole point of a risk-based trading scheme should be to incentivise good practice. If you penalise people in those high-risk areas—if you lump them all together and say that they're all the same—then why should they do anything? That's the key point.

10:00

[69] **Mark Reckless:** Jenny.

[70] **Jenny Rathbone:** Picking up on the point that even in New Zealand, you can have occasional breakouts where somebody has imported the cattle from the west of the south island, however much you test animals, surely it's always possible for a TB-infected cow to get through because of the incubation period. Is that correct, or is it always possible to identify whether somebody's TB free or not?

[71] **Dr Enticott:** I'm not a disease epidemiologist, but I—

[72] **Professor Woodroffe:** I can talk to that a little bit. TB is a difficult disease to diagnose, so the statutory test—the tuberculin test—misses a proportion of animals, and that's why one of the main problems is that you have herds that test clear that are still infected. I know of herds like this in Cornwall where you test clear, you're all excited and then in the next test there's another infection, and it's probable that it was just never cleared out. There are other tests that I mentioned earlier—the gamma interferon test, which is a more sensitive test; it picks up more true positives that the tuberculin test but it also picks up more false negatives, and that's the trade-off—you end up killing animals that don't have TB.

[73] But I think, overall, the possibility for clearing out the disease over time using these approaches has been demonstrated repeatedly in this country and elsewhere. So, I think when you get to a point where the

infection is close to eradication, you ought to be able to mostly pick up the—. It ought to be possible eventually with these tools, if they're implemented aggressively, to get the disease to very, very low levels.

[74] **Jenny Rathbone:** Okay, because that's the anxiety in north Wales—that they're going to get somebody importing the disease because of inadequate controls. So, in your view, do you think the controls that we're now planning to impose on a regionalised basis are sufficient in terms of what you can do in the testing of animals or the testing of cattle?

[75] **Professor Woodroffe:** I wouldn't like to comment on that.

[76] **Jenny Rathbone:** Okay. And Gareth, are you able to comment on that?

[77] **Dr Enticott:** I think, in general, as Rosie just said, all tests have their problems and their limitations, and you can go too far with tests as well. Again, my research on New Zealand shows that, back in the 1970s, they were interpreting the test incredibly strictly. What that means is that you over-interpret the test, and you penalise those farmers where maybe disease actually isn't on the farm, and their business starts to suffer as a result of it. So, you can take things too far or you can take things not far enough, and there's a balance there somewhere because of the limitations of the test. Again, the story in New Zealand is trying to find that balance and altering that balance as you go along to meet the circumstances of particular regions, and particular businesses as well.

[78] **Jenny Rathbone:** So, do you think we've got the balance about right, based on your academic—?

[79] **Dr Enticott:** The balance is always adjusted—[*Inaudible.*]

[80] **Jenny Rathbone:** Okay, because it obviously leads us into the other causes. And I've had one person contact me saying that we're looking in the wrong direction, and it's all about the rats who are infecting the cattle. When I asked the chief veterinary officer about this, she said, 'No, no, absolutely not; rats don't get TB'. But, clearly, rats are far more common than badgers and they're always present on farms; it's just like they go with it. So, have we been looking in the wrong direction in this regard, or—?

[81] **Professor Woodroffe:** In terms of other hosts, evidence suggests that the principle host, or the overwhelmingly most important host of TB in this

country, is cattle. The evidence strongly suggests that badgers are involved. Badgers can and do give TB to cattle in those places where that's a serious problem. The best estimate of badgers' contribution is that they're responsible for about—in England, this is; in the high TB risk areas of England—6 per cent of newly affected herds. There's a confidence interval around that going from about 1 to 25 per cent. So, at least 75 per cent of the newly affected herds are being re-infected by something other than badgers. A lot of that is probably cattle-to-cattle transmission.

[82] In the course of the randomised badger culling trial, we commissioned two major studies on the role of other wildlife species in transmitting TB to cattle. The group of species that came out most clearly from that are deer, which get the right sort of pathology that allows them to transmit the disease on. Some species can catch the disease, but the pathology suggests that they actually can't then transmit it; they're a dead-end host.

[83] **Jenny Rathbone:** And this is through their faeces? Because they don't normally have physical contact with cattle.

[84] **Professor Woodroffe:** Well, the mechanism of transmission is a whole other issue, but just in terms of developing lesions that the bacteria could potentially come out from. Rats didn't come up as particularly high risk. Yes, there are a lot of rats, but it looks as though they're probably not the most important, or not a major source.

[85] What I would say, and what I think is very important to bear in mind in this, is that new evidence—. You know, you touched on how the transmission happens. That's been something that we haven't known for decades. We've known that badgers can, indeed, give TB to cattle, but we've never known how. Some research that has been going on in my group recently has suggested that badgers and cattle very seldom come into direct contact, suggesting that the transmission is most likely happening through the environment. Now, that's important because it's always been assumed that if you take away the test-positive badger or the test-positive cow, the infection is gone. But what this hints at—and we're doing more research to look at it—is that the bacteria may not be gone; the bacteria may still be surviving in the environment and some of these repeat breakdowns—they may be getting re-infected from the environment, even though the hosts, the animals that have the disease, may have been removed. That's another thing that makes it more challenging. We're just beginning to get a handle on understanding how that works and potentially how important it is. But I think it's potentially

very important, and it's potentially important not just when we think about badger-to-cattle transmission, but also potentially when we think about cattle-to-cattle transmission too.

[86] But I would say, in terms of wildlife, the evidence suggests that we're not really—. What I should've said about deer is that deer can give TB to cattle. It's been shown experimentally and in the States, and it's been shown they can do it without direct contact through the shared environment. So, we know, experimentally—. In that case, it was white-tailed deer, which don't live in this country. What's important about deer, though, is that their distribution isn't nearly as continuous as badgers. Most cattle farms in Britain are going to have badgers on them, but not all of them have deer. Certainly, where I live in west Cornwall, we get really excited, because every six months, you see a roe deer. The deer density is extremely low and yet it's a chronic TB area. So, I think that the role of deer is probably quite patchy, whereas we've shown experimentally, through large-scale field trials, that the role of badgers is quite widespread—not necessarily the biggest threat, but a widespread threat.

[87] **Mark Reckless**: Thank you. Simon.

[88] **Simon Thomas**: I just wanted to explore a couple of these things, particularly still bearing in mind what the Government is suggesting in terms of regionalising the methods for this. The first of them is to ask whether there are particular types of management going on in Wales that are potentially exacerbating, or at least having an effect on this problem, which might be different to other countries, particularly the New Zealand experience. So, we're talking about slurry management and pastures in particular. That's the first question, because I've looked at the recent evidence coming out about the bacterium in the environment and how that has been prevailing. So, that's my first and I'll follow up after, if I may.

[89] **Dr Enticott**: I'm not really aware. I don't think there have been any kind of risk-factor studies in New Zealand about things like slurry and other causes—farm management practices—so I can't give you an answer on that.

[90] **Professor Woodroffe**: I'm not aware either. I'd say, with the work that we're suggesting about the role of environmental transmission, I would say that's at an early stage and I wouldn't be confident to say to farmers, 'You should change your management practices'. I'd say the one thing that may be going on in Wales that may be making the problem worse is illegal badger

culling. There's lots of evidence to show that small-scale culling of badgers increases the TB risk to cattle. There was a study recently from Northern Ireland linking illegal killing of badgers to a higher risk of cattle TB, and that is something that may be going on, and there were some social science studies suggesting it may have been relatively widespread, and that will undermine efforts to control the disease.

[91] **Simon Thomas:** Okay. That takes us to the other aspect of the policy that the Government's proposing, because, as well as the regionalisation, there's a very localised aspect of this, which is to deal with the breakdown on what the Minister has called 'chronic farms', and it's the other way of looking, I think, at Huw Irranca-Davies's question, which is there is a potential for particular tools to be used in particular, very isolated, direct farm areas, and those tools can include the killing of badgers on that particular area—not a widespread cull, but on that area. Again, is there any evidence that that approach can be part of a regionalisation approach, or is it inconceivable that a farm-by-farm approach can build up to a regional approach?

[92] **Professor Woodroffe:** So, I think a farm-by-farm approach—. Actually, I think it's outstanding what's been done now. The impression I get from talking to the vets here in Wales—that they've got a clear handle on the areas where a lot of the TB seems to be in bought-in cattle in the areas where there seems to be, you know, localised transmission of the disease, and so I think that's likely to be very effective. What I would say is that the localised culling of badgers is a crazy idea, I would say, because there's such strong evidence that this is not going to solve the problem. In the randomised badger culling trial, we did an approach where we looked at—. You know, localised badger culling had been Government policy under Ministry of Agriculture, Fisheries and Food between 1986 and 1998, and that coincides with a period when you can see TB escaping from control and rising almost exponentially. Now, we can't know whether that was cause and effect, but what we do know from looking at when we started the randomised badger culling trial is that in the areas where that localised culling had happened, there was evidence that the badgers' social systems were disrupted, and there was more TB in those badgers. If we then look at during the randomised badger culling trial, when we put in place localised badger culling, in the 100 sq km areas where we responded to outbreaks of TB in cattle by culling badgers on a localised basis, those 100 sq km areas had 22 per cent more TB than the areas that had no culling at all, and, you know, a strong, significant effect. If we look within those 100 sq km areas that were

randomised to have localised badger culling, the farms that were within a few kilometres of these culls had two and a half times the risk of getting TB in the cattle, even after you account for increased testing in those areas. So, I think that that is very unlikely to be something that's beneficial, because it's something that is likely to spread the disease. You've done all this work to try to control the disease; you've narrowed it down to these few high-risk areas, and then, to go in and do localised badger culling is going to increase your risk on the adjoining lands. It's going to undermine the good work you've done.

[93] **Simon Thomas:** Why do you think Welsh Government's proposed it, then?

[94] **Professor Woodroffe:** Well, you talked about localised—

[95] **Simon Thomas:** No, why do you think they've proposed it, if that's the evidence?

[96] **Professor Woodroffe:** Well, I can see why—. I can see that there is pressure to do this, and I can see that it's a difficult—. You know, it's difficult to look at an area, or look at a farm, where you've got TB in badgers, and you think those badgers are giving TB to cattle, and it is, I can understand, it's difficult—

[97] **Simon Thomas:** Well, there is a link, isn't there?

[98] **Professor Woodroffe:** Say again, sorry.

[99] **Simon Thomas:** There is a link. You've said yourself there is a link.

[100] **Professor Woodroffe:** Absolutely. There's definitely a link, and there will be transmission from cattle to badgers; there's transmission from badgers to cattle. So, it's difficult to say—seeing that those badgers are there, you suspect that they've got TB. I completely appreciate that it's difficult to not think you can make things better by removing them. The problem is what happens when you remove them, because it's not that they're just gone. What will happen is that other badgers will move into the area that may or may not be infected. The badgers that were in that area, but which may have TB and which you didn't catch will start to range more widely, they'll go on to adjoining farms, and you'll increase the TB risk. This isn't something I'm just saying might happen. We did it. In the randomised

badger culling trial, we had 10 100 sq km areas where we did this. It was a candidate policy. We did it. There were nine 100 sq km areas where we did this and nine times out of nine, we saw the cattle TB go up. Then, in the tenth area—that approach was halted in the tenth area—it never actually had any culling because it was halted by Ministers. That was the only area of those that didn't see an increase like this. It's been shown consistently.

10:15

[101] The other thing I would say about localised badger culling is: I'm actually not sure what legal basis one would use—policy makers will have thought of this—but the two legal instruments that have been used are the Animal Health Act 1981, and the requirement there is that this has to be considered to be necessary in order to eliminate or substantially reduce the disease risk. The other—. And where you've got strong scientific evidence that localised culling is going to increase the disease risk, I would be surprised if that stood up in court. Likewise, under the Protection of Badgers Act 1992, the legal wording is that you can issue a licence for the purposes of preventing the spread of disease, and DEFRA won a legal action against—

[102] **Simon Thomas:** That's the basis in England.

[103] **Professor Woodroffe:** In England. That's the basis in England. They won a legal action against that on the basis that it did prevent the spread of disease. But where all the scientific evidence shows consistently that localised badger culling causes the spread of disease, if there were to be a legal challenge to it, and I don't know whether there would be or not, but if there were a legal challenge, I'd be surprised if it stood up. So, I don't know what the legal—. Not only have you got scientific evidence against it, I'm not clear what legal—. There may be another legal basis I'm not aware of.

[104] **Mark Reckless:** Sian.

[105] **Sian Gwenllian:** Rwy'n mynd i siarad yn Gymraeg. A gaf i jest pigo i fyny ar y pwynt roeddech chi'n ei wneud ynglŷn â bod lladd moch daear mewn ffordd anghyfreithlon ar ffermydd yn gwneud y broblem yn waeth? Sut mae hynny'n digwydd? Os mai dyna yw'r sefyllfa, onid ydy'n

Sian Gwenllian: I am going to speak in Welsh. Can I just pick up on the point you made that killing badgers illegally on farms makes the problem worse? How is that happening? If that is the case, isn't it better that it happens under licence and in a scientific way, and is therefore

well iddo fo fod yn digwydd o dan drwydded ac mewn ffordd wyddonol, a'n cael ei reoli yn y ffordd yna, felly?
managed in the way?

[106] **Professor Woodroffe**: Certainly, it would be better for it to be done properly and under licence. The problem with localised badger culling is that, when you cull badgers, broadly you have two outcomes, and unfortunately they oppose each other. So, the first is, you have fewer badgers, which, if you are trying to control a disease that badgers have, ought to be a good thing. Unfortunately, each surviving badger is more infectious to cattle. There's two reasons for that. One is that we saw consistently, both where we did localised culling and where we did large-scale culling, the proportion of infected badgers go up, and that is due to this disruption of their social behaviour.

[107] In an undisturbed badger population, you'll have a group of badgers living in a territory and, you know, if this is my territory and that's your territory over there, you and I will hardly ever meet. I might have TB but I can't give it to you because you and I—especially if there's a territory between us—won't meet and I won't give you the disease. If the people between us are culled and we both go, 'That's a nice territory, let's go into it', and you and I meet, then you and I might have a fight or interact in some way that causes TB to spread. So, what we saw consistently, in all the areas we culled, whether that was large-scale or small-scale culling, was TB in the badger populations was rising.

[108] Also, because the badgers are ranging more widely, those badgers are coming into contact with more herds of cattle. So, you've got fewer badgers, and that's good, but you've also got each individual badger more infectious to cattle, both because it's more likely to have TB and because it's encountering more cattle herds because it's ranging more widely.

[109] The balance between those two varies according to how many badgers you kill. So, if you can force badgers down to extremely low levels, even though each one is more infectious, nevertheless, you can have a positive impact on cattle TB. You might, nevertheless, see a harmful effect on adjoining land where you've got this disruption still happening. If you have small-scale culling of badgers, you're only killing a few badgers, then you get all the harm or disruption of social behaviour and making them range more widely, increasing the TB rate in them, and none of the benefit from forcing their numbers low. And that's why this localised, patchy, small-scale culling, which often illegal culling is, that's why it's been associated with TB

increases in cattle. Now, that is—. And that's the argument that led the Government in England to look at these very, very large-scale culls and that's—there's a whole other problem associated with large-scale culling, but that's the reason for small-scale culling being so problematic.

[110] **Sian Gwenllian:** Okay, thank you.

[111] **Mark Reckless:** You said that, small-scale, localised culling, the evidence is clear that that increases risk for adjoining land. Is the evidence also clear that it increases continuing risk for the land of the particular farmer where that is happening? Can we say to the farmer, 'As well as affecting your neighbours in a negative way, it may actually be in your own individual interest' even if it's not in their neighbour's?

[112] **Professor Woodroffe:** I'm not sure about illegal killing. With the reactive culls that we did in the randomised badger culling trial, which were quite big—they were covering 5 sq km, 8 sq km, so they were multiple farms—we didn't see an increase on the farms that were culled. The increase was on the adjoining land. But the problem is, of course, that there's always adjoining land. So, it's like a miniature—. With the proactive, these large-scale, culls we saw a beneficial effect inside and a detrimental effect outside. In the reactive, the small-scale, culls we saw actually no effect inside and this harmful effect outside. Of course, just simple geometry tells you that the outside of a small area is relatively bigger than the outside of a large area and that's why England has pursued these very large culls.

[113] **Simon Thomas:** Can I just be clear about one thing, though, because it's been mentioned several times? The illegal culling of badgers—we've all heard the stories but by definition we can't draw any conclusions from that. It's not scientific, we don't trace it, we don't do anything around it—unless you're telling me there's been a proper study done of illegal culling.

[114] **Professor Woodroffe:** There was a study done in Northern Ireland.

[115] **Simon Thomas:** In Northern Ireland, right.

[116] **Dr Enticott:** There's been various work done on it. There is a study using the randomised response method, which is a way of determining whether people are lying or not, which was done at the Royal Welsh Show, which showed about 10 per cent or 12 per cent of people saying that they had killed badgers in the past.

[117] **Simon Thomas:** That was a social trial, as it were. That's a social—

[118] **Dr Enticott:** It was a survey of people at the Royal Welsh Show, yes. Certainly, the work I've done talking to farmers about how they've managed TB on their farm—. I think what's really important is to try and understand, not necessarily how much that goes on, but why it goes on, and the reason it goes on is a sense of frustration that nobody is looking out for these people—'What else can I do?' You talk to farmers about their badgers and they understand these ideas of perturbation and the ideas of perturbation come from farmers themselves recognising that—. They talk about safe badgers and clean badgers and wanting to protect those, but, when you're in a high risk area, you're constantly going down with TB, you've got other pressures as well, going out with your shotgun or whatever for some people will be a completely natural reaction, and partly because they feel let down. Whether, because of the systems of Government in England and Wales, that's different nobody knows. You can't monitor it. I suppose the other side to it is enforcement. Enforcement of it is nearly non-existent. There aren't high-profile cases, or there are very few high-profile cases, of farmers being taken to court for it and fined and even the fines for those farmers who have been prosecuted are not punitive or anywhere near the costs of the breakdown themselves. So, it's incredibly difficult to manage and, as Rosie says, could have negative consequences for TB in the area.

[119] **Simon Thomas:** So, the strongest counter-effect to that would be social pressure: for farmers to understand that this is having a bad effect on their neighbours.

[120] **Dr Enticott:** Yes, yes, and I suppose—

[121] **Simon Thomas:** That's the strongest tool you've got, isn't it?

[122] **Dr Enticott:** Yes, a bit like compensation as well. So, in the past there were always cases—. People talked about farming TB for the compensation and, gradually, over time—people used to tolerate that—that's now seen to be a bad thing and a sign of bad farming, if you like.

[123] **Huw Irranca-Davies:** Professor Woodroffe, would I be right in recalling that I've heard you say before that you don't rule out culls if the evidence can show that a cull of some design would be effective?

[124] **Professor Woodroffe:** Yes.

[125] **Huw Irranca-Davies:** Thank you, that's fine.

[126] **Professor Woodroffe:** Yes. I mean, I can tell you—

[127] **Huw Irranca-Davies:** Okay, in which case—

[128] **Professor Woodroffe:** We killed 11,000 badgers, by the way.

[129] **Huw Irranca-Davies:** In which case, as you know, in the Cabinet Secretary's statement, she held out that wide-ranging statement around all possible measures, and she alluded to—. She explicitly said that it'd be worth looking at the Northern Ireland trials—humane capture, test, kill.

[130] **Professor Woodroffe:** That's right.

[131] **Huw Irranca-Davies:** What's your view on Northern Ireland? I will ask you as well, Gareth, in a moment, but what's your view on the Northern Ireland approach?

[132] **Professor Woodroffe:** So, this approach, called TVR, test and vaccinate or remove, was conceived in Wales—it was a Welsh idea—in 2009. The Government of the time commissioned some modelling on it, and they explicitly rejected it on the basis of that model. The reason was this, that—. So, the idea is that you catch your badgers, instead of killing them, you blood-test them, you see which ones test positive, you kill those, and you vaccinate the rest and let them go. It sounds great, because you've got the best of both worlds—you're doing a little bit of culling, you're taking out the ones that are infected and you're protecting the remainder through vaccination. So, it sounded really good.

[133] When they modelled what the outcomes would be, there were two alternatives. One was that it looked really good, and it was better than either culling or vaccination on their own. The alternative scenario was, if it caused social disruption of the kind that I've been describing, it was projected to make things much, much worse. The reason for that is that you can't catch every badger. The tests only detect about half of the truly infected badgers, and the vaccine doesn't protect—you can't catch every badger, so you can't vaccinate every badger, and the vaccine isn't 100 per cent either. So, you will inevitably leave behind, after you do TVR, some infected badgers and some

susceptible badgers.

[134] Now, if that removal of small numbers of—. You're killing a lot fewer badgers. If that's enough to cause perturbation, to cause the social disruption, then this was projected to spread the disease and make things much, much worse. I wasn't involved, but I gather that the committee looked at it and went, 'Oh, my goodness, it's too risky'. And that's why it was explicitly—

[135] **Huw Irranca-Davies**: Has something now moved on so that we should look at this again?

[136] **Professor Woodroffe**: I think that two things have happened since. My research team was commissioned by the Department for Environment, Food and Rural Affairs to look at what the evidence was that small-scale culling of badgers would cause this social disruption, this perturbation. The evidence that we were able to collate suggested that it would—it looks as though perturbation starts with the first badger you take out. When small-scale culls happened as part of the Government policy in England between 1986 and 1998, that was associated with wider badger ranging, more TB in the badgers, and all the things that we saw when we did small-scale culling and large-scale culling of badgers.

[137] So, it looks like small-scale culling probably does cause perturbation, and therefore you are more likely to be in that scary scenario of making it worse. I would say that the Government in Northern Ireland decided to go ahead with it. They commissioned some other modelling from the same people that showed a different, a qualitatively different, outcome, and I would want to look really, really hard at that model, because I'm not convinced that that is—. To see such a big difference in the model suggests to me that there's a difference in the model structure, and that maybe the assumptions of the model were a bit more generous than is appropriate. So, I'm really quite suspicious about the model that was commissioned in Northern Ireland—for Northern Ireland—from the same people who did the model for Wales.

[138] The other big thing, of course, that's changed is that Northern Ireland are doing it. If it were my decision, I would say—. This is, potentially, a really promising approach, someone else is doing it; I would be inclined—. If it were up to me, I'd see how they got on.

[139] **Huw Irranca-Davies:** Are they doing the proper scientific—? It's been one of my big criticisms of the England approach: there's damn-all scientific monitoring going on that we can benefit from any evidence that flows from it, frankly. In Northern Ireland, are they doing that monitoring that we could actually learn something?

[140] **Professor Woodroffe:** It's incredibly expensive—that's the other thing to add. So, they've only got one area—they've got one, I think, 100 sq km area. They are, for example—I know, because they came to me and talked to me about it—tracking the badgers to see what disruption it causes. I haven't seen any results, but I know that they were talking to Christl Donnelly about some of their work. So, I think they're doing something—I don't know the details of what they're doing.

[141] **Huw Irranca-Davies:** Chair, it might be that we want to also do some sort of review of that piece of work that's been done out there and the different conclusions that the other modelling came to. That would be quite—. Can I just ask, quickly: do you have anything to add, or would you agree with what's been said, that, at the moment—

10:30

[142] **Dr Enticott:** Well, what I would say is, this idea of finding the infected badgers and removing them has been seen as the kind of holy grail since the 1980s. And it's the holy grail because it addresses the problem of social acceptability. When you run workshops with the public, they ask two questions. One is: why can't you vaccinate the cow? The other is: why can't you identify and remove infected badgers? So, if you have an approach like that, you start to deal with that broader social question.

[143] **Huw Irranca-Davies:** My only other question linked to this is: what would you say to the argument, and it's a quite understandable argument—we're being told that the vaccine, which is currently not available for use in Wales, and may not be available until 2017, maybe 2018, who knows—that, in the absence of a vaccine, you should cull? I guess the logic of your argument, on the evidence that you've proposed, is, no, that's an understandable gut reaction, but you shouldn't. Is there any reason why you should simply say, 'We haven't got the vaccine, let's go ahead, let's do a bit of culling'?

[144] **Professor Woodroffe:** So, I think in the absence of the vaccine—. Well,

first is, in the absence of a vaccine, the last thing that we want is TVR. You'd be TR—you'd be doing small-scale culling of badgers—

[145] **Simon Thomas:** Sorry, how does Northern Ireland have the vaccine?

[146] **Professor Woodroffe:** I gather they were allowed to continue to use expired vaccine because they considered it to be a research project—for this year. I wasn't; my research project got mothballed.

[147] **Mark Reckless:** We've been struggling to—[*Inaudible*.]—policy, and that has to be the reason for it being expressed this way.

[148] **Professor Woodroffe:** That's right; that's what I was told. I don't know what their situation will be for 2017. There's talk about importing from Canada, I think; I don't know what Northern Ireland are going to do. So, you certainly would not want to do TVR in the absence of a vaccine, because then you're just doing small-scale culling. I think, in terms of, if there's no vaccine—. I completely understand the gut reaction; I would still say wait for the vaccine, if it were me, because, especially if you're looking at a small-scale culling, it's all cost and no benefit. Maybe it'll allow me to briefly touch on large-scale culling. I saw that that was not on the table in the consultation, but let me just add that. Wales is on track—. The idea is to control and then eradicate the disease. Now, if you want to eradicate a disease, you've got to do one or both of two things. You've got to reduce the proportion of animals that are infected, and/or reduce the area that's infected. Now, if you look at what badger culling does, it increases the proportion of badgers that are infected and it spreads the disease to new areas, so it's doing the opposite of the two things you would want to do to eradicate the disease. So, I can't really see how badger culling on a large scale can constructively contribute to TB eradication.

[149] **Mark Reckless:** Sorry, can you just clarify how you reconcile what you just said with what you said earlier, I think at the previous RBCT, that you could see, I think, a 12 per cent reduction over nine years?

[150] **Professor Woodroffe:** We saw a 12 per cent net reduction. So that means we see a bit less in the area that's culled and more on the adjoining land. So, if all you're interested in is pushing things down a bit, then there would be an argument, and that's been the argument that's been made, that, 'Well, it's worth it. Even though we see this harmful effect on adjoining land, it's still worth it.'

[151] **Mark Reckless:** But if the cull were carried out everywhere, there wouldn't be any—.

[152] **Professor Woodroffe:** Well, if the cull were carried out absolutely everywhere, right up to all the coasts, then there would be no edge. But you would then—well, firstly, it would be eye-wateringly expensive, and, secondly, it would probably be—. You would start to contravene the Bern convention, which we're a signatory to. If you waved a magic wand and eradicated badgers from the British Isles, the TB problem in cattle would be easier to solve. But there is no such magic wand, and, if you had one, it would be illegal. The much less effective tools that we have mean, both in terms of testing and in terms of badger capture—. You will have seen the difficulties that have been faced in the English licensed culls in being able to kill enough badgers. They were set up with the aim of reducing badger density by at least 70 per cent, and they really, really struggled to achieve that and had to keep on—I hesitate to say 'moving the goalposts'; they've had to repeatedly—.

[153] **Simon Thomas:** Who moved the goalposts again? [*Laughter.*]

[154] **Professor Woodroffe:** They've repeatedly struggled. They've altered their targets in ways that made those targets easier to reach, but tacitly abandoned the aim of reducing badger numbers by at least 70 per cent.

[155] **Mark Reckless:** Paul.

[156] **Paul Davies:** Following on from Huw's question, in the absence of a vaccine, and without culling, how would you then go about tackling bovine TB in our wildlife population?

[157] **Professor Woodroffe:** In the wildlife population?

[158] **Paul Davies:** Yes.

[159] **Professor Woodroffe:** Well, I'm hoping it wouldn't be in the absence of a vaccine.

[160] **Paul Davies:** That's quite realistic, though, isn't it? Because perhaps we won't have a vaccine for at least two years.

[161] **Professor Woodroffe:** There may be a vaccine. There may be some vaccine next year. I think there are people looking into that—into whether it's possible to source other sources of vaccine. So, I wouldn't completely give up on a vaccine.

[162] Setting that aside, we talked earlier on about biosecurity, and I think this is one of the big challenges: farmers are told, 'Improve your biosecurity', and yet it's very unclear what that actually means, especially with regard to wildlife. So, I could write you a list as long as your arm of all the things that farmers have been told to do to reduce their TB risk from badgers: raise your mineral licks, fence off natural water, barricade your barns, and yet we don't know whether any of it works, really. The big challenge, and one of the reasons that we don't know, is that we haven't even been able to do experiments on it because there are so many different things you would vary. You would have to do such a massive trial that you would really struggle and it would be very time consuming.

[163] Ultimately, the reason why we haven't been able to provide that very, very specific advice on what you're almost guaranteed will work is that we haven't known how transmission happens. So, you can't say to farmers, 'Well, transmission happens when badgers come into your buildings, so, an electric fence for buildings and that will solve the problem.' The evidence: there are places like Ireland where badgers are avoiding farm buildings. So, we can't say that that's where the transmission happens, and that's how the transmission happens, but we are working on it and we're getting closer. So, I'm involved in a project at the moment where we're sampling the environment everywhere, just trying to see whether we're finding the TB more in water troughs, or should we be fencing off latrines. So, I think we're on track to have some more evidence-based suggestions for wildlife-related biosecurity.

[164] But I also want to step back and say that at least 70 per cent of TB in cattle is caused by something that's not badgers, and the best estimate is that 94 per cent of TB—new-found incidence in cattle—is caused by things that are not badgers. A lot of that is going to be cattle-to-cattle transmission. But I think that, referring to the dangers of fatalism, I'm not saying you shouldn't do anything. John Bourne and I have argued about this. John Bourne's view—Professor John Bourne, who chaired the independent scientific group—is that you should just forget about badgers and focus on cattle, because that's where it'll work. I think that it's important to do something about the wildlife, both because they are a part of the problem,

but also because it motivates people to feel this sort of sense of fatalism, 'Well, the badgers are going to re-infect them anyway.' I think the more that we can do to do something about the transmission from badgers, the more it will motivate farmers to implement the cattle-based biosecurity that's important. But, I appreciate that that is a challenge.

[165] **Paul Davies**: So your view really, then, is that we need more information as far as transmission is concerned and then find a solution from that. That's your view, effectively.

[166] **Professor Woodroffe**: Yes, I would say that and vaccination. I think that the badger culling is problematic.

[167] **Paul Davies**: Yes, okay. Can I just, sorry—?

[168] **Mark Reckless**: Do you want to come in before we get to the compensation issue?

[169] **Jenny Rathbone**: I wanted to come back in on slurry management, which was raised, really just to ask: what are the controls on slurry management in an area where the cattle had been infected, and therefore their faeces—?

[170] **Professor Woodroffe**: I know that there's guidance. I don't know—

[171] **Dr Enticott**: There's guidance, certainly in DEFRA's biosecurity action plan. There's something in there on slurry—guidance. I don't think there are any restrictions on what they can and can't do.

[172] **Professor Woodroffe**: I should add to that, because being a biologist that tracks things, we put trackers on badgers to find out where they go and we track where the cattle go, but we've also put trackers on muck-spreaders, and it's amazing how far they go. They go off spreading slurry on other people's land.

[173] **Jenny Rathbone**: Yes, because these are machines that are hired for the day.

[174] **Professor Woodroffe**: No, these are machines that belong to that farm. But if you've got 100 cattle and you've got to do something with all the slurry, they're struggling to find places to put it, and sometimes it's going on

other properties.

[175] **Jenny Rathbone:** And, potentially, it remains in place. Does anybody test—

[176] **Professor Woodroffe:** That's one of the things we're looking at. Certainly, there is evidence to suggest—. I think that there's enormous—. You'll be able to ask others about this, but what role indirect transmission—that's transmission without direct contact—plays in cattle-to-cattle transmission is controversial. There are people who say it's just completely unimportant, but if you go back to the 1930s, it was possible to take months-old cow dung and inject it into guinea pigs and give them TB. So, it can happen. What its importance is today is unclear, but I think it's an important thing to make clear and technologically possible to better understand what role that might be playing.

[177] **Jenny Rathbone:** The general assumption is that transmission in humans is through inadequate hygiene and people not washing their hands and then preparing food for somebody else. So, why would that not be the case in animals?

[178] **Professor Woodroffe:** Well, my understanding of TB transmission among humans is a lot of it's to do with close contact in confined spaces.

[179] **Simon Thomas:** Absolutely. Overcrowding.

[180] **Mark Reckless:** Simon.

[181] **Simon Thomas:** I just wanted to—and we could be here all day, I know, going through this—understand this, because you said very clearly that there's a social reason for dealing with wildlife TB, in effect; there's a social reason that it has the effect of driving good behaviour elsewhere, so that would be positive. But, you've also said—several times now—that vaccination is your preferred tool, but what is the scientific basis that vaccination works?

[182] **Professor Woodroffe:** Absolutely. And I think that's a really good question, because although we know a lot about what impact badger culling has, because we did a massive, massive study looking at it, that has not been done for badger vaccination, and I wouldn't look a farmer in the eye—and I say this to the farmers that I recruit for my vaccine trial—I can't look them in the eye and say, 'This will help', and I wouldn't say to a policy maker, 'This

should be the be-all and end-all of your policy', until we have the evidence. You'd expect me to say that; I'm a scientist.

[183] I think that some of the vaccination that's been done up to now has been great, in that there have been places, including in south Wales, where there was a vaccination of badgers on a large scale. What hasn't gone hand in hand with that is an assessment of whether it's working. So, we know that in terms of badger vaccination, from studies in Gloucestershire, we know that badger vaccination reduces the risk. So, if I'm a badger and I don't have TB, I test negative for TB, I'm vaccinated, I'm then less likely to subsequently test positive. So, it's got some protective effect. We also have evidence to show that, if you vaccinate at least 30 per cent of the badgers within a social group, you reduce the risk of the cubs in that group that have not been vaccinated testing positive. So, it's something where it ought to be possible, therefore, and this has happened in human populations, it ought to be possible, over time, to vaccinate a badger, to take a population of badgers that have TB, bearing in mind that, even in a highly infected population, most of the badgers are still not going to be infected, there are going to be still lots of uninfected—.

[184] **Simon Thomas:** But the rate of vaccination for human populations is something like 90 per cent, isn't it, to have an overall effect?

[185] **Professor Woodroffe:** Yes.

[186] **Simon Thomas:** I don't know if that's the same for wildlife.

[187] **Professor Woodroffe:** No. Well, I think one of—. The same element of badger behaviour that makes culling so problematic actually really benefits vaccination because, with human populations, the number of people I've met today is much more than the number of badgers that a badger would meet in its lifetime, because they're mostly only interacting within their own social group, and a little bit with their neighbours. So, they have these very localised movements, this very limited pool, so if you can vaccinate even quite a small area, all the things that we say about small-scale culling of badgers don't apply. The small-scale vaccination of badgers, vaccinating on one farm, if you can get all the badgers that use that farm, that has the potential to be beneficial.

[188] The approach that they've taken in England is to say that there's no point in vaccinating badgers in high-risk areas, because the badgers are

already infected, and badger vaccination doesn't do anything about the badgers that are already infected. Now, it's true that it doesn't remove the badgers that are infected, but it does greatly restrict their ability to give the disease to other badgers.

10:45

[189] Over time, badgers die off at a rate of 25 to 30 per cent a year. Highly infected ones die more rapidly than that, so over a few years those infected ones should die off. It ought to be possible to take a highly infected population of badgers over time, undertake repeated vaccination, year on year, and over the years you should see a decline. But we don't know, because no-one has ever done that.

[190] **Simon Thomas:** You haven't done it, no.

[191] **Professor Woodroffe:** That's the trial we were trying to do in Cornwall that's currently on hold because we can't get the vaccine.

[192] **Mark Reckless:** Okay, and we have two more questions on changes to compensation, first from Paul, and then on prospects for targets from Sian.

[193] **Paul Davies:** Just very briefly, as you know, the Welsh Government proposes to reduce the compensation payments—to actually reduce the cap from £15,000 to £5,000 per animal slaughtered because of bovine TB. I just want your views on that. Do you think that is the right approach, because some farmers, of course, will argue that that's no incentive in order to improve the quality of their herd, for example? So, what are your views on that?

[194] **Dr Enticott:** I think going back to the point made earlier, once you introduce interventions like that or change parts of the system, there's always a negative or a subsequent knock-on effect. When England reduced their levels of compensation back in 2007—some time around then—the talk amongst farmers was, 'What is the incentive for me? I'm not receiving the value for my animals, I don't trust the Government, so what do I do about this problem? What is the only thing I can do about this problem? The only thing I can do is do what I think is right, which is look after my badgers.' And that's the euphemism for illegal culling, which they would use. So, once you make dramatic reductions in compensation like that, those are the kinds of consequences you need to look out for and be aware of. As you said earlier,

what is better to do, to kill badgers in a legal way or to allow that to happen?

[195] The other thing I would say about compensation is to look at models of compensation in other countries. So, in New Zealand, the level of the compensation is set by farmers—not the specific level, but the overall level of compensation. So, farmers have said that, in certain cases, compensation shouldn't be paid at all. In certain circumstances, 70 per cent of the value is paid. And that's a decision made by farmers, and farmers make that decision themselves as part of the governance arrangements. They all know what the score is, and what that means is that what they're trying to do is to say to farmers, 'Look, this is the situation we need to look after; we're paying for this; we need to do the right thing here', and to create some kind of social momentum and social movement around trying to do their best to eliminate bovine TB on their farms and in their country.

[196] **Mark Reckless**: Sian.

[197] **Sian Gwenllian**: Diolch. Rwy am jest ofyn cwestiwn ynglŷn â'r targedau. Hynny yw, mae yna darged yn Lloegr i gael statws dim TB, ond eto nid oes dim targedau o fewn polisi Llywodraeth Cymru ar hyn o bryd. A ydych chi'n meddwl bod angen gosod targed, ac hefyd a oes angen gosod targed gwahanol ar gyfer y dair rhanbarth maen nhw'n bwriadu eu cyflwyno?

Sian Gwenllian: Thank you. I just want to ask a question on targets. There are targets in England to have no TB, but yet there are no targets in the Welsh Government's policy at the moment. Do you think there is a need to set a target, and also is there a need to set a different target for the three regions that they intend to introduce?

[198] **Professor Woodroffe**: So, I think there are maybe not numerical targets, but the consultation states that we would like the high-risk area to become intermediate risk, and the intermediate to become low, and the low to become TB free. I think the Welsh Government was the first to talk seriously with a straight face about TB eradication, and I don't think they've stepped back—to my knowledge, they haven't really stepped back from that. They haven't set out a 25-year strategy like the Government has in England, but—

[199] **Sian Gwenllian**: Do they need to?

[200] **Professor Woodroffe**: I don't really know whether that's helpful or not.

[201] **Dr Enticott:** I think, again, going back to New Zealand—and there are dangers of keeping going back to New Zealand—one of the key elements they did was to set targets and to be driven by targets right from the very offset. If you got people from OSPRI or the animal health board over to Wales right now, that would be the first thing they would say. That's what drove their improvement all along. You could see what was happening.

[202] In response to your question about having different targets for different areas, yes, I think that's quite important, partly because the target set in England, if you are living in a high-risk area, you would just look at that target and think, 'This is completely ridiculous; we're never going to get that'. But that target is more specifically relating to the low-risk areas, which they can get declared TB free in a relatively short space of time. So, people need to know where they stand. Having a target can help that.

[203] **Sian Gwenllian:** What would your targets be?

[204] **Dr Enticott:** I don't know. Don't ask me. [*Laughter.*]

[205] **Sian Gwenllian:** Okay.

[206] **Mark Reckless:** Good. And the final question from Huw Irranca-Davies.

[207] **Huw Irranca-Davies:** It's a very small question, and it relates to what Dr Enticott has been saying about the New Zealand and Australia models. What importance, do you think, in any strategy going forward, should there be on finding a way to have firm buy-in from the farming community? You've touched on it a couple of times—the ownership of this, by farmers as well as Government.

[208] **Dr Enticott:** That is the key lesson from both New Zealand and Australia's successful eradication programmes, or almost eradication programme in New Zealand. It is that, unless farmers drive those programmes themselves, or are part of the governance, they don't work. They didn't work up until the point at which New Zealand, in the 1980s, basically asked farmers to take control of their TB policy. Now, there are arguments for and against that. You might argue that, in New Zealand, the system is actually quite similar to a fairly bureaucratic, regulatory approach now. Back in the 1990s, less so. And so, these things change and evolve as they go along.

[209] The challenge here is like you said, and the question is: how do you get that? It depends on what is on the agenda, essentially. In New Zealand, there was never any question about are we or are we not going to go off and drop 1080 poison and kill a load of possums. That was always on the agenda. In the UK, in England and Wales, the question of the badger is always what dominates these discussions, and until there is clarity over what is possible and what isn't possible, what's on the table and what isn't on the table, it's quite natural for the farming industry to say, 'Well, I'm not going to get involved in this, because I can't see what's going to happen; there's too much uncertainty'. So, that's the challenge.

[210] **Mark Reckless:** Dr Enticott, Professor Woodroffe, thank you very much for your enlightening evidence. We are grateful to you both.

[211] We will have a five-minute break.

Gohiriwyd y cyfarfod rhwng 10:52 a 11:02.
The meeting adjourned between 10:52 and 11:02.

Twbercwlosis mewn Gwartheg yng Nghymru
Bovine Tuberculosis in Wales

[212] **Mark Reckless:** Thank you for coming in, Mr Paton. It's much appreciated, and we look forward to getting the veterinary perspective. I think we have one declaration of interest.

[213] **Huw Irranca-Davies:** Yes. I'm an associate member of the British Veterinary Association, so it's in my declarations of interest.

[214] **Mark Reckless:** Okay. Mr Paton, can I kick off by asking you initially what's your assessment of how effective, or otherwise, Welsh Government policy has been towards the eradication, and, in the meantime, management of TB to date?

[215] **Dr Paton:** We have been going in the right direction, so the change to yearly testing has been very impressive, and I've been very pleased to see the progress in that direction. I suspect that we are at a point where we have gone as far as we can with that particular policy of the Welsh Government as it is, in terms of cow controls. They need to be tightened up, we need to alter things in terms of risk-based trading, so we're very pleased to see that

informed purchasing in the new consultation. But there is an arm of the entire control of disease that is left uncontrolled at the moment, and that's the wildlife sector. We as the BVA would be very adamant that TB control is only going to work if we use all the tools in the toolbox, and badger control and control of the wildlife sector has to be one of those.

[216] **Mark Reckless:** You'll have heard the Cabinet Secretary's statement a couple of weeks ago on the strategy. Do you interpret that as a steady-as-she-goes development of the policy, or as a big change in approach for the future?

[217] **Dr Paton:** Somewhere in between those two. It's got sensible changes where they are. It's using what is working within the actual current policy, and making the right steps in the areas where that policy has not been addressed. So, it's at least putting on the table the option of wildlife control, and moving forward to regionalising and rewarding those areas and those farmers that have reduced TB or have reduced TB to near-free levels, I think, is a sensible policy, to allow them to protect the gains that they've made at this point. So, I wouldn't characterise it as either steady as she goes or a radical change, but a sensible evolution at this point.

[218] **Mark Reckless:** Thank you. We've just had a session with two academics, so Members questions will be, I think to a degree, in light of what we've had from that, and I think I'll start, if I may, with Huw Irranca-Davies.

[219] **Huw Irranca-Davies:** Thank you, Chair. Could I just ask you, when you compare at the moment—. Ignore for the moment the wildlife reservoir issue, but when you look at the cattle measures, cattle control, risk-based movement restrictions et cetera—all of that—is your assessment that, in Wales, it is a more stringent environment at the moment in terms of the impact on farmers than in the areas of England where there is bovine tuberculosis infection?

[220] **Dr Paton:** My assessment is that they're probably roughly the same. I think the level of cattle controls and the impact it has on farmers are broadly the same in the areas of high incidence of TB and what we have in Wales.

[221] **Huw Irranca-Davies:** Are there aspects in Wales where it is more onerous, in terms of the demands on farmers, particularly under the new proposals being considered?

[222] Dr Paton: Under the new proposals, in high-incidence TB areas, the increased frequency of testing is going to have an impact on farmers. It is quite an amount of effort for farmers to do testing every six months, even when they are on paper TB free. So, we are asking them to do an awful lot more work than we might do in other areas. I'm not aware of an area in England that has six-monthly testing as a routine for each farmer.

[223] **Huw Irranca-Davies:** Just on that, as one final follow-up, on that particular issue, there is a school of thought that says, within the highly infected areas, you should actually be testing less because once you're at that high level of infection, you should be going back there, you should be putting the measures in place and going back there less often. You should be doing the high testing in the intermediate areas and so on to make sure that they don't have the infection coming to them. Does the BVA have a view on that?

[224] **Dr Paton:** Our view really is that we need to have as much frequent testing as is required, but not too much testing to put farmers off the entire programme. I think, from my point of view, or from our point of view, in high areas we need to be testing as frequently as possible to remove as many infected cattle as rapidly as possible. In the lower infected areas, I would be reducing that, assuming that there are other appropriate controls in place, because we can't burden the farmers with too much testing otherwise there is a risk that they will not co-operate with the rest of the programme and then we may well push them into a place that's out of business.

[225] **Huw Irranca-Davies:** Well, okay, that's very helpful. Sorry, one further follow up—you think the six-monthly is appropriate in the areas of high infection.

[226] **Dr Paton:** I think there's justification for that to be appropriate, because we can get these animals out as quickly as possible.

[227] **Huw Irranca-Davies:** Great.

[228] **Mark Reckless:** Simon.

[229] **Simon Thomas:** Os caf i ofyn yn Gymraeg, jest ynglŷn â'r math o brofi sy'n cael ei wneud. A fedrwch chi jest ddweud wrth y pwyllgor faint

Simon Thomas: If I could ask in Welsh, just with regard to the kind of testing that's being done. Could you just tell the committee how much of

o'r profi bellach sydd yn gamma yng Nghymru? Pa ganran yw'r prawf yna, a, gan ein bod wedi clywed tystiolaeth bod y gwahanol fathau o brofi—

the testing is gamma in Wales? What percentage is there of that test, and, as we've heard evidence that different types of testing—

[230] **Dr Paton:** Apologies, this is not being translated for me at this point. My apologies.

[231] **Simon Thomas**: No, it's our fault.

[232] **Mark Reckless**: It's not your fault. Our apologies to you.

[233] **Simon Thomas:** Fe drïa i eto. Ynglŷn â'r profi, a fedrwch chi ddweud yn gyntaf faint o'r profi bellach yng Nghymru sy'n cael ei wneud ar sail y prawf gama, sy'n fwy sensitif yn ôl y dystiolaeth y mae'r pwyllgor wedi ei derbyn? A beth yw'r cydbwysedd rhwng defnyddio'r dull yma, lle rydym yn cael y *false negatives*, ac efallai yn lladd anifeiliaid sydd heb y diciâu arnyn nhw, a'r pwysau ar yr ochr arall o golli anifeiliaid sydd â'r diciâu arnyn nhw? A ydych chi'n credu ein bod ni wedi cyrraedd y cydbwysedd iawn?

Simon Thomas: I'll try again. With regard to the testing, can you tell us first how much of the testing in Wales is now done on the basis of the gamma test, which is more sensitive according to the evidence the committee has received? And what is the balance between using this approach, where we have the false negatives and then perhaps cull creatures that don't have TB, and the pressure on the other side of losing animals that do have TB? Do you think we've reached the right balance?

[234] **Dr Paton:** Okay. Gamma interferon, in terms of how much testing is done, is done only on those farms where we have a huge problem. So, it's the minority of farms in Wales. I wouldn't want to put a number on it. I'm probably not the appropriate person, but 90 per cent plus, as a working figure, is done by the skin interferon test.

[235] **Simon Thomas:** So, just on that, would you expect that to be reflected now in the high area that the Government's proposing—the regionalisation—and that you'd expect basically all farms in high areas to be gamma interferon tested?

[236] **Dr Paton:** I would expect much more gamma interferon in that sort of

area, because these are the problem farms or these are the areas that are most likely to have the problem farms that we need to target. In terms of the sensitivity, yes, it is more likely to find the infected animals in there and, more importantly, is less likely to leave infected animals behind. But, the balance with that is we take more cattle than we should—more healthy cattle—out of the herd. I think it is, where appropriate on appropriate farms to get to the bottom of a problem, a perfectly acceptable strategy and it is something that we have to accept—that we're going to take more cattle than we really need to.

[237] **Simon Thomas:** Ac yn fras iawn, a ydych chi'n gysurus yn y BVA am y dull o ranbartholi sydd yn digwydd nawr, o dan y cynllun newydd, ac felly y bydd yna wahanol—fel rydych chi newydd ei awgrymu—ddulliau profi, efallai, yn y gwahanol ardaloedd, ac y bydd, o bosibl, wahanol reolau symudedd? Fe gawn ni weld sut mae masnachu yn digwydd yn y pen draw. A ydych chi'n gweld hynny fel cam—rydych chi'n sôn am esblygiad naturiol—a ydych chi'n gweld hwn fel rhywbeth y dylai Cymru fod yn ymgeisio amdano, ac a ydy e'n agor y drws i ranbarth o Gymru, o leiaf, gael ei datgan yn rhydd o TB, rywbryd yn y dyfodol agos?

Simon Thomas: And very briefly, are you comfortable in the BVA about this approach of regionalisation under the new scheme, and therefore that there will be different—as you've just suggested—different methods of testing, possibly, in different areas, possibly different rules regarding mobility? We'll see what happens with trading, eventually. Do you see that as a step—you're talking about natural evolution—do you think this is something that Wales should be seeking, and does it open the door to a region of Wales being declared free of TB in the near future?

[238] **Dr Paton:** Yes, we are very comfortable with the regionalisation issue. We think it rewards farmers in areas, and protects the gains that the Welsh Government has made in getting rid of TB in the areas. We think it's a natural thing that should be done, to allow us to protect the gains in areas, particularly in north Wales, where we are close to TB free. And it opens the window for us to be able to say parts of Wales are, in fact, TB free, and protect the trade with the rest of the UK and Europe from at least those areas as a starting position, and then we can build and go on from there.

[239] **Simon Thomas:** Thank you.

[240] **Mark Reckless**: Following up on the point about the gamma test, I note that we've seen this fall in the number of herds with new incidences from 1,286 in 2009 to 722 for this year—I'm not sure whether that's just this year to date. It was 893 last year. At the same time, we've seen an increase in the number of cattle slaughtered from just under 6,000 two years ago to 9,500 already this year. Is that gamma test one of the reasons why we're seeing that?

[241] **Dr Paton**: I would think so. There's always the danger of—we're looking at a very long-term disease, so taking one year's figures is a very dangerous thing to do. So, I'd be looking at five or 10-year trends on any particular parameter that we're interested in. But, definitely, if we are using gamma interferon testing on a much wider basis—and I think we are; we have an increased number on these problem farms—we are going to see more animals being slaughtered, because, by definition, as you've probably already been told, the sensitivity and the specificity will mean that we take more cattle with this test.

[242] **Mark Reckless**: We have a helpful graph from our research staff; it goes back to 2006. And the two data series seem to be quite closely correlated from 2006 through to 2014, going up to a peak in 2009, and then generally turning down, and sort of moving around, largely in parallel, to 2014. It's really this year—and I take the caution you have given about one-year figures—where there's been a very stark divergence, in that we've seen a sharp increase in the number of cattle slaughtered, from 6,872 to 9,492. At the same time, the reduction in herds has gone from 893 to 722. I just wonder, has that, at least—I'm not talking about the causation—but has that taken place at the same time that there's been a significant increase in the use of the gamma test, or is that not something that has changed over the past year?

[243] **Dr Paton**: I think there has been a change in the policy in terms of the use of the gamma interferon tests. They're much more likely to use it with animal health. The deployment of gamma interferon is a decision by animal health and the Welsh Government, rather than my vets and my members in general, although we might be actually the ones taking the sample. But my understanding is, yes, there has been some change; it probably isn't all the answer, but it's certainly a component of that.

[244] **Mark Reckless**: And the other test—I understand there's the statutory basis for that. Should we be looking at a review of the law as regards these

two tests?

[245] **Dr Paton:** The test that we standardly do—the single comparative intradermal test—is one that has been deployed across the world, and it has been used successfully in the format that we have got to eradicate TB in a load of countries. New Zealand is one of them; Scotland is using that same test. So, the test works. We would never want to say that if we had a better one we could refine it. We would not reject that. But, at the moment, the test, as it stands, and if it's done appropriately and well, is an appropriate test to deploy in the environment.

[246] **Mark Reckless:** On the availability of vaccine, we've had, I think, slightly contrasting evidence as to the prospects of having reliable access to a vaccine, and on what timescale. Do you have a perspective from the BVA as to what the position is?

[247] **Dr Paton:** We have nothing—we've no information further than that. Our information is that it's not available, and we've been given no indication of when it might become available at this point.

11:15

[248] **Mark Reckless:** Thank you. Are there other Members who'd like to come in? Simon.

[249] **Simon Thomas:** I'd like to move on to the wildlife sector, if that's possible, because the BVA has consistently said publicly and to Assembly Members that you do support, if necessary, a cull—which is of badgers, in effect—provided it is targeted, effective and humane. Is the proposal in the regional approach now being taken by Welsh Government, it would allow a cull to potentially happen on farms with chronic breakdowns. That's my understanding, at least—that that would be a potential tool that could be used. Obviously, it's targeted, but is it effective? Do you think that that's actually an effective measure?

[250] **Dr Paton:** We have certain reservations with the targeting on individual farms. The evidence, as far as we are concerned, supports that what makes a cull effective is a sufficient number of badgers killed in a sufficient time, over a sufficiently large area. From the Krebs trial, that, I believe, is 150 sq km. Anything outside that currently does not have evidence for it, so that would be what we'd define as effective, at the moment. We're watching what's

happening in Ireland. That would be a very promising approach, but we don't feel that there's sufficient evidence to say you can just transplant—

[251] **Mark Reckless:** The Republic of Ireland, or Northern Ireland?

[252] **Dr Paton:** The Republic of Ireland.

[253] **Simon Thomas:** What about the Northern Ireland approach, which has been this capture, vaccinate and eliminate—?

[254] **Dr Paton:** It's a similar sort of concept and there are similar concerns about the small area that these animals are taken out of.

[255] **Simon Thomas:** Because in the evidence from Rosie Woodroffe that we had earlier, she was, I think it's fair to say, particularly scathing about the idea that a very localised cull could work and that, in effect, with badgers' social movements and the way they live, the perturbation that we've seen in the large-scale trials would be exacerbated because you would have lots of individual perturbations, then, that would all impact. Is that the basis of your scepticism about it as well?

[256] **Dr Paton:** Yes, that's my scepticism, broadly, as well. If we take out one badger sett or one farm's sett—a farm's population of badgers—then there's a whole surrounding population of badgers to move in and contaminate, or be re-picked up in the infection. I read Rosie Woodroffe's paper that she published in the last few weeks and months, and yes, the badgers contaminate the pasture, so we need to keep these animals off the pasture to prevent and break that infection cycle. And cattle as well—so, there have to be cattle controls there, too, but it's very difficult to just put in management steps to keep cattle off pasture. So, to make that significant, to make that improvement, we need to make it over a significant area of the 150 sq km—and the hard borders and sufficiently reduce the number of badgers within that area.

[257] **Simon Thomas:** So, it would be fair to say that your view as the BVA, then, is that you've consistently, as I've said, supported a targeted cull in the past, and you really are still wedded to the earlier proposals, which was of a larger scale, as you said, with hard edges and boundaries. You feel that the perturbation on that kind of trial can be dealt with, but the proposal on this current regionalised basis could be more—

[258] **Dr Paton:** Yes, it could be more—

[259] **Simon Thomas:** —destructive—well, destructive is not the right word there.

[260] **Dr Paton:** I suspect there would be more movement of badgers within that and, therefore, the likelihood of spread of TB within that area is higher. That's what, as far as I can tell, the evidence supports. Anything beyond that, we need to wait for the evidence to see. The problem with waiting for the evidence is our farmers are dealing with it tomorrow and today, and my vets are trying to work with these farmers today, so there is a limit to how much we can wait before doing things.

[261] **Simon Thomas:** What about vaccination, in particular, in badgers—wildlife vaccination? Obviously, you don't really deal with badgers as a vet—well, you may occasionally, I don't know—but is there evidence that vaccination in badgers can work?

[262] **Dr Paton:** It depends on what you mean by 'work'. I think there is limited evidence that—

[263] **Simon Thomas:** Reducing incidence, I suppose, of TB in the badger population.

[264] **Dr Paton:** I think there's limited evidence for that; not a great deal. I've not seen a huge amount of evidence and work in that direction. It's work in progress. My bigger concern, I think, is that there's definitely no evidence that that translates into reduction of TB in cattle. We haven't seen any evidence of that whatsoever. Even in the intensive action pilot area in Pembrokeshire and those areas, I think we're still too early to see the impact. It would be very attractive and it would be very useful if it could be shown to demonstrate that it works, but we're not there yet.

[265] **Mark Reckless:** Before I move to Huw and Jenny, can I just ask you to clarify something for the record that I didn't understand? The reference that Simon made to a regional basis and perhaps that not working compared to a large-scale trial, what's the understanding of 'regional'? Are these localised trials or—?

[266] **Simon Thomas:** Very localised culling as opposed to the regional umbrella.

[267] **Dr Paton:** I understood farm level.

[268] **Simon Thomas:** Yes, farm level.

[269] **Mark Reckless:** Good, thank you. Huw.

[270] **Huw Irranca-Davies:** If my understanding is correct from that exchange with Simon now, you are ruling out, as the BVA, the Northern Ireland model.

[271] **Dr Paton:** As far as we understand, the modelling does not support it and we haven't seen the evidence to suggest that it'll have the impact.

[272] **Huw Irranca-Davies:** But it's certainly neither the scale nor the intensity of the type of trial, the type of culling—call it a 'trial' or whatever—that you've just described, which is actually the type of culling that was originally proposed in England and then, frankly, they ripped the guidelines up.

[273] **Dr Paton:** Yes. We wouldn't be supporting what's happening in Gloucester now with free shooting and that type of approach.

[274] **Huw Irranca-Davies:** And Hereford and Somerset and everywhere else.

[275] **Dr Paton:** Yes.

[276] **Huw Irranca-Davies:** Okay, well, that's fascinating, because as you know, in the Cabinet Secretary's statement, she said all these measures are now under consideration and she signalled that we should look at Northern Ireland, but you're saying, 'Well, actually, that's not the model to look at'.

[277] **Dr Paton:** We don't believe it is the model to look at at this stage. We're always open to new evidence, but we don't believe the evidence is there to support it yet.

[278] **Huw Irranca-Davies:** Do you believe that there's any alternative? I know individual members of the BVA have individual opinions, but the BVA has come to a collective opinion that a form of culling should be used. Is there any feeling within the BVA, from the scientific advice that you have internally, that there is any other way to control TB within the wildlife

reservoir, within badgers?

[279] **Dr Paton:** Frankly, I think, no. The scientific evidence is—we're fairly comfortable that it has to be the wide-scale trial as it stands at the moment. I have not heard anyone produce a second way of controlling wildlife that is evidence based at the moment in any BVA meeting.

[280] **Huw Irranca-Davies:** Do you give any salience whatsoever to the arguments of people like Professor John Bourne who would say that, whilst of course the science would say maybe 5 or 6 per cent is transmission from badgers to cattle, the majority is cattle to cattle, and as such, you could eradicate this by dealing with the cattle-to-cattle transmission?

[281] **Dr Paton:** I don't think so, because we would always have that internal, that re-infection pressure from the wildlife reservoir. So, there is 50 per cent cattle-to-cattle transmission—I'm not going to argue with that number—but where that originates from is typically from introduction from another source, and some of that source is wildlife. So, once one cow is infected within that, then it spreads potentially rapidly within that, so unless you've dealt with the wildlife as part of your overall control strategy, then you're not going to get to an eradication stage.

[282] **Huw Irranca-Davies:** One final question. If you take your approach, which would be the originally conceived England approach to culling, how do you overlay that on the map of zones—the high, intermediate and low zones? Does that work at all? Where are the hard edges? Where are the boundaries?

[283] **Dr Paton:** We'd have to go on to the maps and have a look. That would be a piece of work that would need to be completed in there to try and identify those edges and areas and try and overlap them with areas in the high incidence area, where you have real problems with lots of cattle with TB. It's not something I could answer immediately right now, but it's a piece of work that needs to be done.

[284] **Huw Irranca-Davies:** If you can't do that, my suggestion would be that you go into the high areas and you do this, and the acknowledged perturbation that has been proven will be spilling over into the intermediate areas. So, unless it can be done with hard borders, you can't do it within the wider proposals that have been put forward.

[285] **Dr Paton:** I believe there are probably hard borders there that can be

identified—so, rivers, coasts, main roads and arterial roads would provide the sufficient borders there. So, I think there will be identifiable areas. I wouldn't want to quote you a specific road that would be appropriate right now.

[286] **Mark Reckless**: A quick intervention from Simon on this point, and then Jenny.

[287] **Simon Thomas**: If I may, just on this—. Obviously the regional map that the Government has produced still includes the Pembrokeshire intensive action area as it was originally conceived; that's still within the high action area. Just one particular question—you've touched on it, but I just want to be absolutely clear, because we had evidence from Rosie Woodworth that said very clearly, with the large scale culling, yes, there's a 12 per cent reduction in that area, but the perturbation—. Basically, what she said was that it cancels it out. Are you saying that you don't accept that evidence, or are you saying, though that happens, if you've got hard borders, you feel that that's a potential tool that we can use?

[288] **Dr Paton**: I think it's the hard borders that will allow us to allow that. If we have the appropriate culling area to minimise badgers moving in and out of that area, that will balance that risk out.

[289] **Simon Thomas**: Okay.

[290] **Mark Reckless**: Jenny.

[291] **Jenny Rathbone**: When one of your members identifies TB in cattle, you obviously then slaughter the affected cattle. Is it your view that all the cattle in that herd should be slaughtered?

[292] **Dr Paton**: There are circumstances when that would be appropriate. I wouldn't want to say that that is automatically what should happen, but I certainly think, in some of these higher risk areas, taking out whole groups would be a very useful method to go forward.

[293] **Jenny Rathbone**: Well, because otherwise aren't you simply just—you know, the incubation period is—. Obviously, I don't know what that is, but the cattle that have not tested positive on that occasion will then pass it on to any new cattle.

[294] **Dr Paton:** We will be coming back within 60 days, or about 60 days, to re-test, and that will be kept up until we have removed all the infected animals. That has been demonstrated and regularly shown to work and get rid of disease in a number of farms and get us back under control. So, it would be a very much case-management based decision, and we welcome that ability for our farmers and vets to work out what's specifically going to happen on their farms. But I wouldn't put it as categorical that that's what should happen.

[295] **Jenny Rathbone:** And having identified on farm A that you've got a problem, do you then test the adjacent farms as well?

[296] **Dr Paton:** We do indeed. That would be contiguous testing. So, we would be looking for nose-to-nose contact and reactors through that particular means of transition.

[297] **Jenny Rathbone:** And what then happens to the slurry of the farm?

[298] **Dr Paton:** So, the slurry can't leave the farm. It can be spread on the land, but then you are not permitted to put livestock on that land that you've spread that slurry on for two months after that point. We believe that—Defra have given us indication—that's sufficient to kill off any bacteria in the slurry.

[299] **Jenny Rathbone:** Regardless of what season it is.

[300] **Dr Paton:** Well, we in Wales have restricted seasons that we can spread slurry, so we're talking mostly in the summer anyway. We're not permitted to spread slurry in the winter at all, so it's almost a moot point, but you're right.

[301] **Jenny Rathbone:** Although isn't—doesn't the frost—?

[302] **Dr Paton**: Well, the slurry would still be in the tank at that point, and then, as soon as we come out into the spring, that's the point when we're permitted to start spreading slurry. So, the sun and the environment temperature would rise at that point.

[303] **Jenny Rathbone:** So, is there any evidence that the slurry is a contributory factor, given that Professor Woodroffe's latest research tells us that the badgers are infecting the cattle on the pasture? That would also mean that the cattle are infecting the badgers on the pasture.

[304] **Dr Paton:** I'm not aware of any direct evidence that can link slurry and badger infection and cattle infection in one link. But it's a very attractive link to establish, and we think we should probably be controlling the slurry from that point of view anyway.

[305] **Jenny Rathbone:** Probably controlling, but we aren't sufficiently at the moment.

[306] **Dr Paton:** I don't think we have sufficient evidence to be categorical about that statement.

[307] **Jenny Rathbone:** And what about the other potential contributory factors? Because it's not just badgers, there is other wildlife in the area, and, indeed, other animals in the area, that may be carriers: so, for example, rats, cats, obviously there are dogs as well. What role do they play in re-infecting, or—?

[308] **Dr Paton:** Of the species you've named, they are spill-over hosts. They are indicators of a huge infection pressure, rather than something that will maintain the infection on the farm of itself. So, cats, for example: if you see a cat with TB, it's probably from a farm that has been having a lot of TB on that farm, and it's an indicator that there's a severe problem that you need to deal with. But it's unlikely to spread it back into the cattle.

[309] **Jenny Rathbone:** So, as far as you're concerned, cats don't spread the disease back to the cattle.

11:30

[310] **Dr Paton:** As far as I'm concerned, they don't, but they are an indicator that there is a problem on the farm. They get infected by the cattle and show me that it's there. But, hopefully, on the vast majority of farms, we're keeping it under control before we get to that stage.

[311] **Jenny Rathbone:** And rats? Given that they live in the dirtiest places, they probably are immune to TB—I don't know, but, as carriers, they obviously go everywhere and are impossible to—

[312] **Dr Paton:** They do, but we're not, again, aware of them being a direct link for TB. From all the work that's been done, badgers in the UK and cattle

are the two major animals that spread TB between each other. For rats, there's no evidence that they do. They should be controlled for other purposes, but I'm probably not going to blame them for TB today.

[313] **Jenny Rathbone**: Okay. And one of the other interesting points made by Rosie Woodroffe was that larger herds are much more susceptible to TB infection, just by being all together in one herd, than smaller herds, but that the tendency in agriculture is to go for larger herds, particularly dairy herds. So, I just wondered if that was a concern of yours.

[314] **Dr Paton**: Large herds are a risk, a problem, for all infections, not just TB—for every infection, every disease that we're dealing with, large herds are a risk.

[315] **Jenny Rathbone**: Regardless of how intensively they're being herded together.

[316] **Dr Paton**: It really does depend on the management of those animals. You can manage large herds effectively to control TB, it's just a little bit more difficult to do and needs a bit more thinking about. So, it's not their size per se that's the problem, but it's the way the animals are managed within that herd.

[317] **Jenny Rathbone**: So, on these very large milk farms, obviously, they're all coming together to be milked—is that the most difficult place to manage TB?

[318] **Dr Paton**: No, I would be putting it in the sheds, because they need to be there for a significant amount of time, so it's in the sheds where they are housed, it's having appropriate air-flow management within those sheds, it's having enough space for them, it's having enough water troughs for them so that these animals are not all crowding around one trough, and things like that. I don't think that the milking parlour itself is the particular risk; it's the sheds and the buildings around that.

[319] **Jenny Rathbone**: So, it's because they're in sheds, rather than on the fields.

[320] **Dr Paton**: That would be the implication, yes.

[321] **Jenny Rathbone**: Okay, thank you.

[322] **Mark Reckless:** Huw.

[323] **Huw Irranca-Davies:** Just a supplementary to the earlier discussion: in light of the consultation on the proposals that the Cabinet Secretary has brought forward, and your clarity—it's a helpful clarity—on the BVA's position, not only on a cull, but the type of cull, are you intending, during this period over the next few months, to bring forward proposals on not just the approach, but actually where a pilot area should be?

[324] **Dr Paton:** No. We are not—I'm not aware that we have done. We are looking at the consultation, and we will respond to the consultation. We would be more than happy to sit with the Welsh Government and discuss that very question, but we'd wait to be invited.

[325] **Simon Thomas:** I think Welsh Government is going to have to take that responsibility upon itself. [*Laughter*.]

[326] **Mark Reckless:** Paul Davies.

[327] **Paul Davies:** Just to come back to the Northern Ireland model, just for me to be clear, obviously you're ruling out that badger-culling model full stop, but obviously the Welsh Government is looking at that, from what the Cabinet Secretary has been saying. Don't you think that that model—? You think that that model has obviously been running long enough, then, to prove itself. You believe that the evidence is there so that you can obviously make these decisions and come to these conclusions.

[328] **Dr Paton:** So, the Northern Ireland model, what I was saying here—I apologised if I confused, but, I think, in Northern Ireland, the evidence is not there yet to do that sort of—

[329] **Paul Davies:** So, you could still consider that.

[330] **Dr Paton:** We'd still consider it. We're always open to new evidence, but we have to work on the evidence we have.

[331] **Paul Davies:** So, you're not ruling it out, then.

[332] **Dr Paton:** Not ruling it out, without—. But not at the moment; we wouldn't accept it at the moment without further evidence.

[333] **Mark Reckless:** Just to follow up on a couple of points you said earlier: in terms of saying we shouldn't look at the Northern Ireland model, actually, we're happy to look at it and see how it's going, but we shouldn't at this point—

[334] **Dr Paton:** At this point in the game, in the whole process, it's too early to take that on board.

[335] **Mark Reckless:** Can I go back to what you were saying about hard borders for potential culling areas? I'm not sure, but are you distinguishing that from the previous randomised culling trial? Is the suggestion that that didn't have hard borders and, by having hard borders, we could improve on it?

[336] **Dr Paton:** My understanding of the evidence is that hard borders are part of those criteria for making an effective trial. So, if we have those in place, the badgers can't cross that, and we will reduce the perturbation effect from that.

[337] **Mark Reckless:** Okay. So, a hard border the badger can't cross: rivers, large roads—.

[338] **Dr Paton:** Rivers, large roads—those would be the type of structure that we'd be looking to have in place, exactly as the intensive action pilot area was designed on. So, it had a river on one side, a major road on another, mountains that the badgers were unlikely to cross at one end, and the coast on the other, which—

[339] **Mark Reckless:** And what's the role of the English border in this? Clearly, there's the potential of a different approach on the Welsh and English side of that border, and there've been these English—what I had thought were pilot trials but don't seem to have been operated as such, in Somerset, Gloucestershire and now Herefordshire.

[340] **Dr Paton:** We are going to have to work with the English Government to try and get an aligned response. We then have to worry that these badgers from these culls are going to cross the border and infect our farms. We need to—. It may be that some of these pilot areas for culls are targeted up there to try and manage that particular issue. It is going to be a headache, and cross-border co-operation is going to vital to doing it, so talking to our

English counterparts is going to be necessary as we work forward. But we need to talk, I think.

[341] **Mark Reckless:** And with reference again to the hard borders of the trial area, can the Wye act as that in some areas?

[342] **Dr Paton:** It certainly could do, yes. I would think that river might well be a useful landmark to use as one edge.

[343] **Mark Reckless:** Huw.

[344] **Huw Irranca-Davies:** I'm just wondering—. It might be helpful if we had the BVA's position not simply on hard borders, but, if you are advocating the original, as conceived by Natural England, guidelines—the model in England—it wasn't only hard borders. Other significant criteria were the time of the year that that would take place. So, not inhumanely in cubbing times of the year, but also in the narrowest possible window, which was then defined as six weeks only, not 13 weeks or forever and a day, and 70 per cent guaranteed taken out.

[345] **Dr Paton:** That's correct.

[346] **Huw Irranca-Davies:** These are high, high hurdles that the original trials even—not the RBCT, but the recent English culls—failed to hit. Could we just have your thoughts on that? Because I wouldn't want to get fixated only on hard borders; there are a lot of other criteria. Then, also, what are your thoughts on whether you've seen any value from this from England at all?

[347] **Dr Paton:** So, it is a big ask. I have no problems with that. This is a big disease and an important disease, so big asks are what we need to have. It's going to be very difficult. We do need, as you quite rightly point out, other targets, so, a 70 per cent reduction in badgers, to make it effective. To make it humane it has to be at the right place—so, what we don't want is cubs starving in the setts.

[348] From there, what I'm worried about, in terms of looking at what's happening in England, is that, if we go down that route, we will do a lot of shooting and a lot of culling in an inhumane manner that will, in fact, be ineffective. That's why we, as the BVA, have really pulled back and withdrawn our support from those particular trials, because we don't believe it's

possible, or has been demonstrated to be possible, to do those things. It's been too prolonged, and we haven't reached the targets, and the evidence is that free shooting has been inhumane.

[349] **Sian Gwenllian:** Gwnaf ofyn yn Gymraeg. Petai fodd, felly, diffinio ardal efo'r ffiniau caled o'ch cwmpas chi, faint o boblogaeth moch daear mewn canran sydd angen lladd er mwyn bod yn effeithiol? A ydy hi'n bosibl cyrraedd at y ganran ddigon uchel?

Sian Gwenllian: I'll be asking my question in Welsh. If it was possible, therefore, to define an area with these hard borders around it, how much of the badger population in percentage terms needs to be culled in order for that to be effective? Is it possible to reach a high enough percentage?

[350] Yr ail beth, mwy cyffredinol: a ydyw i'n synhwyro bod y BVA yn teimlo yn gryfach erbyn hyn nad ydy difa a brechu ddim wir mor effeithiol ag oeddech chi'n tybio ei fod o? Hynny yw, a oes yna fwy o dystiolaeth yn dod drwodd rŵan i wneud i chi gymryd safbwynt ychydig bach yn wahanol i beth oeddech chi'n ei gymryd ychydig yn ôl?

The second thing, in more general terms: do I sense that the BVA feels more strongly now that culling and vaccination aren't really as effective as you thought they might be? That is, is there more evidence coming through now to make you take a slightly different position to the position you took some time ago?

[351] **Dr Paton:** So, in terms of badger numbers in the cull, as we said, 70 per cent is the target that we need to get below. It is possible. It is very difficult. I won't pretend that it is not very difficult, but it's certainly possible, and we have not seen any evidence that suggests that our original position should be changed. We still stick to badger culling over a wide area as a major and important tool in the toolbox. We certainly see wildlife control as part of that whole package of measures.

[352] I'd just like just to reiterate that we are focusing on badgers, but we expect controls across all the species—the cattle and the badgers. There's no one element that can be over-emphasised over the other. So, we wouldn't be wanting a badger cull without these other elements as well.

[353] **Mark Reckless:** There have been substantial complaints about the English pilots or trials along our border. I'm not quite clear whether it's the fact that it's shooting or it's the way the shooting is happening that is

alleged to make it so inhumane. I just wondered what your assessment of that was, and also other potential ways of culling or control, such as, for instance, gassing of setts. How would you assess those in efficacy and how humane they are?

[354] **Dr Paton:** So, what's happening—. Our complaint or our issue with the free shooting is that when we watch the measurements on—. If we get observers looking at free shooting, more badgers than we are comfortable with are taking a prolonged time to die. So, that's our issue in terms of humaneness.

[355] **Simon Thomas:** Just to be clear: free shooting, not traps?

[356] **Dr Paton:** Free shooting; they are not trapped—they are roaming wild. Our view is that the humane way to do it—the guaranteed way of killing a badger—is to trap them and then you shoot them in the trap. So, you have no issues with accuracy and where the bullet lands, or that type of thing. That is the current evidence base we've got of the most effective and humane way to euthanise badgers.

[357] Gassing in setts I am sure is effective. I am less sure that it is humane at this stage. Obviously, I know that carbon dioxide from when we use it in slaughter in abattoirs is considered an aversive gas, and makes the animals very uncomfortable as the concentration rises. So, that concentration has to rise rapidly. Other gasses are probably available, but we need the evidence to show that they are humane and effective at this stage.

[358] **Mark Reckless:** Sian.

[359] **Sian Gwenllian:** Can you just describe—? You've described the effect of culling the badger. How does an infected cow look? Can you describe that, so that we have, you know—?

[360] **Dr Paton:** Currently, when we pick up infected cattle they are in very early stage infection. So, a badger that we would normally see as sick at this point in Wales would be having its lungs filled with large lesions, would be emaciated, would be generally suffering, as a typical example. The cattle that we're picking up, we're picking them up at a stage where there may be only microscopic lesions in the lungs and the abdomen, so ostensibly these are healthy but infected and infectious animals that could pose a risk to other animals and to the human food chain. So, they are then collected from the

farm, taken to a normal abattoir and slaughtered in the normal process that we would do for any other cattle that we use for meat consumption, or as culled at the end of its life as a dairy cow. So, they're dealt with in a humane manner, or as humane as we possibly can from that point of view. It is just the sheer number that we're putting through these abattoirs with TB, and the reduction in the productivity. These are animals that potentially have five, six, seven, eight years of productive life left in them, and we're taking them out of the herd far earlier than we need to do.

[361] **Mark Reckless:** Simon.

[362] **Simon Thomas:** My understanding is that that animal can then enter the food chain.

[363] **Dr Paton:** If it has insufficient lesions, so there's—

[364] **Simon Thomas:** So, is it the vet that checks the lesions, and to say whether it's got—? Is it in two parts of the body that it has to show signs of disease? Is that correct?

[365] **Dr Paton:** If it's got a lesion in two parts of the body, the entire carcase is condemned and not fit for human consumption. If it's in one part of the body, then that part of the body—so, the forequarters or the hindquarters; they usually split it in half—that has the lesions within it, and it's usually the forequarters, that's condemned and the rest can then enter the food chain. And that would be done by a vet. So, most of the time, meat inspection is done by eastern European meat inspectors who may be vets, but they're not qualified to work here, but TB condemnation is done by the OV, the official veterinarian, in the abattoir.

[366] **Mark Reckless:** And on affecting the food chain, can you just describe a bit more the risk of that?

11:45

[367] **Dr Paton:** Currently, our trading status within Europe is based on us having an effective, licensed and legal TB control policy and them feeling that it's under control. If we don't have that in place and they feel that TB is no longer controlled and we're not complying with their regulations, then they would ban, or they have the potential to ban, the export of meat into the EU and we would lose a major trading partner at that point.

[368] **Mark Reckles:** Huw.

[369] **Huw Irranca-Davies:** Sorry, that's just spurred me—I wasn't going to raise this until later, but you mentioning it there—is there any reason, when we already have a UK TB eradication policy that is agreed at an EU level, under which there are devolved Governments that are part and party to that, which have a different approach, to expect that post Brexit, in the BVA's view, if you continue with that model, the EU is going to turn around and say, 'We don't accept it anymore'?

[370] **Dr Paton:** We have no particular reason, but we just flag it up as a risk.

[371] **Huw Irranca-Davies:** As a risk, okay. That's helpful. I'm going to move on to the wider—. There's a package of proposals here on compensation, in respect of trading, more restrictions on cattle movements and regionalisation, and the BVA is supportive, broadly, of the wider package that's been put forward. Can I ask, then, what do you see as the role of the BVA in Wales in driving forward that, in arguing that change, in explaining that change? You are so close to the farming community as well. Do you see yourself as having an active role as an engine for that change to what will be more stringent demands on farmers as well?

[372] **Dr Paton:** I would see our role as information transfer and support of the policies that are in place. So, as an example, advocating for risk-based informed purchasing and advocating of movement of cattle, of buying in cattle from places where they are low risk and bringing them in, so you don't bring TB onto farms. Our view would be to promote the best practice within farms as we see it in terms of trading, in terms of biosecurity, in terms of managing animals, for their health and welfare—an information-based and an information transfer organisation, supporting and advocating for the best practices on farms.

[373] **Huw Irranca-Davies:** That's really helpful. Can I then ask you, where do you see the biggest risks at the moment in terms of bovine TB? We spend a lot of time talking, understandably, about the controversial issue of the wildlife reservoir and culling or alternative methods. Putting that to one side for the moment, in terms of cattle transmission and cattle movements and so on, where are the biggest risks? What is happening within the Welsh industry that we could drive down on greatly, with the farming community with us, to really turn this around?

[374] **Dr Paton:** I think informed trading is where I would go with that, and making sure that farmers are aware, as much as possible, of the risk that they take when they buy animals, how to mitigate that risk, either by buying from a specific location—north Wales or someplace where it's free—and what to do with those animals when they enter the herd. I think there's a huge amount of work to be done on that. I will put a conflict of interest: I am working on a bovine viral diarrhoea eradication programme for Wales, and right at the heart of that is that very concept of informed trading—farmers knowing where the animals are coming from and knowing what to do when they get them on the farm.

[375] **Huw Irranca-Davies:** How do you then, going back to my earlier question about the BVA's role in this, on a voluntary, risk-based trading approach, persuade the wide body of farmers—every farmer is different, every farming family is different—that it's in all of their interests to take this informed approach?

[376] **Dr Paton:** We have to use the network of vets that I've got. The most effective thing I can do, or my members can do and I can do, is persuade them to take that information and sit down over the coffee table with their farmers who they've built up a relationship with and get them to pass that message on and say, 'This is why you're hurting yourself if you do this—.' It's that relationship between the local vet and the farmer that's going to be key to getting these things accepted within the farming community.

[377] **Mark Reckless:** Thank you. Can I go to Jenny and then Simon?

[378] **Jenny Rathbone:** What's your role in helping to control the secondary market that inevitably will rise up if you've got better controlled sale of clean cattle that farmers know where they come from? There will inevitably always be people who just want to offload cattle that they suspect may be infected.

[379] **Dr Paton:** That's partly a caveat emptor-type thing and it's going back and talking to the farmers themselves and saying, 'Okay, there is this secondary market, we know these are clean animals, these are animals that we're less sure of that are out there on the market—don't touch those.' And, in terms of us, it's again going back to those vets and to having that conversation about, 'You want a high health unit. Protect yourself; don't buy that from those particular sources. Let the guys who are more risk averse, or let them go direct to slaughter.'

[380] **Jenny Rathbone:** But you wouldn't propose better regulation or more regulation to say: you may not bring cattle into Wales unless they've been tested as TB free.

[381] **Dr Paton:** We would be happy to see—again, with all the health programmes that I'm trying to build—moving cattle with a known high health TB-free status. It has to be the way forward, and limiting the ability of infected cattle to be moved either into Wales or around Wales has to be part of what we need to do.

[382] In terms of the BVA and its role, it really isn't about farmer education—using that vet-farmer channel.

[383] **Jenny Rathbone:** But do you think it requires both things, i.e. both the farmer education and the regulations—

[384] **Dr Paton:** I think so, yes.

[385] **Jenny Rathbone:** —to prevent the trading of animals about which we don't know whether they're infected or not?

[386] **Dr Paton:** I would be much more comfortable seeing animals that we knew the status of being moved around.

[387] **Jenny Rathbone:** Okay, thank you. The last thing: I just wanted to ask what the prevalence of disease from TB is in cattle that are not housed in sheds, so that there are breeds that you can keep out for 12 months of the year.

[388] **Dr Parton:** Lower than in within sheds, I think, there. So, those areas that are closer to being officially TB free are in the sort of areas where there's a significant number of beef animals in the herd population, and so they are lower in those areas.

[389] **Jenny Rathbone:** So, the major source of infection, as far as you're concerned, is animals that are housed indoors and in close confines.

[390] **Dr Paton:** Well, they certainly have larger numbers of animals that are infected. So, it is a risk factor, and it does increase the problem for those particular animals. Source? It depends on whether they buy in or whether

they're closed where that disease then enters that herd.

[391] **Jenny Rathbone**: Would you see that as an argument for changing the way we farm?

[392] **Dr Paton**: I would see that we need to be improving health and welfare across the board, and helping our farmers to provide best practice to make all diseases better. I'm not changing the way we farm. We still have to have a farming industry at the end of this, so there has to be a limit to how far we can actually push farms—they still have to be able to run their businesses and do things, but we can work with them to improve things within those businesses to the best of our ability.

[393] **Jenny Rathbone**: Okay.

[394] **Mark Reckless**: Simon and Huw both wanted to come in. I'm not sure which is most on this topic.

[395] **Simon Thomas**: Yes, it's following on, really, because the implication of what you've said is you'd like to see fewer cattle movements per se, and if we're going to have cattle movements, you want this informed trading, so that we know that the cattle that we're really moving are completely safe and disease free. This is a little bit anecdotal, but, I mean, certainly, the farmers I talk to tell me that it's been very marked recently that cattle buyers from Scotland in particular were no longer interested in buying cattle from Wales, including the parts of Wales that are disease free, because they simply would be taking a risk, and maybe there are social pressures—as I understand, there are social pressures in Scotland, because the surrounding farmers don't want Welsh cattle on that farm because, 'Don't go there, mate'. So, is the regionalisation approach a way, perhaps, of reopening some of these reasonable markets?

[396] **Dr Paton**: Absolutely, because, what most people are looking at is the yearly testing interval, to say what the risk that we've got here is, and we know, sitting around the table, that north Wales is essentially free. There are farms in areas that have not had TB for a significant length of time. So, if we can then change that and give them, the farmers, our trading partners, confidence that in these areas, if you buy cattle from these areas, it is a low-risk choice to make, then we will open up those markets, or we are likely to open up those markets again.

[397] **Simon Thomas:** And then the second question around there was, you know, there's quite—. Actually, Welsh farming is often quite diverse, though people like to think it's all a monoculture, but, you know, even your sheep farmer will have suckler cows, but they may be close to or they may happen to be in a higher, intensive area, but the suckler cow trade is quite important to Welsh farming. Is there a way of having informed trading, even if things are coming from what looks on the face of it to be a TB high-risk area, when there is this difference, as you've just pointed out in your earlier evidence, between dairy and beef as well?

[398] **Dr Paton:** It really depends on how much level of information you want to give or associate with that cow. So, if I can point to a farm and say 'It has not gone down with TB for 10 years', then that's quite a safe farm to buy things from.

[399] **Simon Thomas:** Even though the farm itself might be in an area geographically—

[400] **Dr Paton:** Yes. You might not consider it as safe as a farm in a low-risk area that's been free for 10 years, but you'd certainly consider it safer than the farm next door that's gone down with TB every year or so. So, if we can give that sort of information in some fashion with the cattle, then that might give buyers the confidence to say, 'Right, I'll buy that individual animal.' So, it's a possibility. It really comes down to studying the social science to see how much confidence that gives people to do it and I guess the only way to get that information is to provide it and then see what happens with purchasing patterns.

[401] **Mark Reckless:** Huw.

[402] **Huw Irranca-Davies:** I'm intrigued here by the clarity you've had on the need to involve the sociological-cultural aspects of working with and trying to persuade the farming community of a certain direction of travel, but also the regulatory aspects, which you're not ideologically opposed to at all. So, I'm assuming that you would be supportive in terms of cattle movements of two of the proposals within this, which are also in the regulatory side and the enforcement side, to look at compensation penalties if there are illicit movements between herds that lead to chronic herd breakdowns that exasperate the problems, and not only that, but the actual linking of these to cross-compliance. So, whether it is cattle movements, breaches of non-compliance with veterinary requirements notices, et cetera, this could hit

their actual single farm payments under the existing CAP. Would you be supportive of this?

[403] **Dr Paton:** Broadly supportive. Obviously it has to be proportionate to the offence and the evidence base that we have for those particular issues causing a problem on there. So, I have, overall, no problems but when we drill down into the detail, what exactly is the penalty and how proportionate is that to the offence, if you want to put it that way—

[404] **Huw Irranca-Davies:** And without wanting to put words in your mouth you'd be broadly supportive of a proportionate approach to both of those, because the message from that would be that good farmers will continue to be able to be so. It's those who do do the illicit movements and the illicit trading that would need to be reminded quite strongly through these penalties.

[405] **Dr Paton:** I would be wanting to reward good farmers and put all the pressure on poor farmers or farmers that do not work to improve TB.

[406] **Huw Irranca-Davies:** Great clarity from the BVA on that.

[407] **Mark Reckless:** Thank you. Before we close, can I just ask Paul whether you need any further contribution? If there are any other points that Members want, if they could indicate now I'd be grateful. No. Fine. All done. Thank you very much for that valuable veterinary perspective. We're grateful for you attending.

11:58

Cynnig o dan Reol Sefydlog 17.42 i Benderfynu Gwahardd y Cyhoedd o'r Cyfarfod
Motion under Standing Order 17.42 to Resolve to Exclude the Public from the Meeting

Cynnig:

bod y pwyllgor yn penderfynu gwahardd y cyhoedd o weddill y cyfarfod yn unol â Rheol Sefydlog 17.42(vi).

Motion:

that the committee resolves to exclude the public from the remainder of the meeting in accordance with Standing Order 17.42(vi).

Cynigiwyd y cynnig.
Motion moved.

[408] **Mark Reckless**: I'm now going to propose that we move into private session, so, thank you.

[409] **Dr Paton**: Thank you very much for your time.

Derbyniwyd y cynnig.
Motion agreed.

Daeth rhan gyhoeddus y cyfarfod i ben am 11:58.
The public part of the meeting ended at 11:58.