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Environment, Climate Change and Land Reform Committee

Tuesday 17 January 2017

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Pàrlamaid na h-Alba

Tuesday 17 January 2017

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ENVIRONMENT, CLIMATE CHANGE AND LAND REFORM COMMITTEE
2nd Meeting 2017, Session 5

CONVENER

*Graeme Dey (Angus South) (SNP)

DEPUTY CONVENER

*Maurice Golden (West Scotland) (Con)

COMMITTEE MEMBERS

*Claudia Beamish (South Scotland) (Lab)
*Alexander Burnett (Aberdeenshire West) (Con)
*Finlay Carson (Galloway and West Dumfries) (Con)
*Kate Forbes (Skye, Lochaber and Badenoch) (SNP)
*Jenny Gilruth (Mid Fife and Glenrothes) (SNP)
*Emma Harper (South Scotland) (SNP)
*Angus MacDonald (Falkirk East) (SNP)
*Mark Ruskell (Mid Scotland and Fife) (Green)
*David Stewart (Highlands and Islands) (Lab)

*attended

THE FOLLOWING ALSO PARTICIPATED:

Professor Steve Albon (James Hutton Institute)
Dr Duncan Halley (Norwegian Institute for Nature Research)
Professor David McCracken (Scotland's Rural College)
Professor Rory Putman (University of Glasgow)

CLERK TO THE COMMITTEE

Lynn Tullis

LOCATION

The Robert Burns Room (CR1)

Scottish Parliament

Environment, Climate Change and Land Reform Committee

Tuesday 17 January 2017

[The Convener opened the meeting at 10:00]

Decision on Taking Business in Private

The Convener (Graeme Dey): Welcome to the second meeting in 2017 of the Environment, Climate Change and Land Reform Committee.

I remind everyone present to switch off mobile phones, because they might affect the broadcasting system.

Agenda item 1 is a decision on whether to take item 4 in private. Are we agreed?

Members *indicated agreement.*

Subordinate Legislation

Financial Assistance for Environmental Purposes (Scotland) Order 2016 (SSI 2016/406)

10:00

The Convener: Agenda item 2 is on subordinate legislation. The details of the negative instrument are in the committee papers. Do members have any comments on the instrument?

Maurice Golden (West Scotland) (Con): I have one comment. I am not minded to move to annul the instrument, but I request that we write to the Scottish Government to ask how it envisages that the grant scheme will be administered and for any examples of where the focus of any activity might be that it is able to share with the committee at this time.

The Convener: That sounds very reasonable. If members have no other comments, and on the basis that we take the course of action that the deputy convener has suggested, does the committee agree that it does not wish to make any recommendations in relation to the instrument?

Members *indicated agreement.*

Deer Management

10:01

The Convener: Agenda item 3 is evidence from a panel of academics on Scottish Natural Heritage's report "Deer Management in Scotland: Report to the Scottish Government from Scottish Natural Heritage 2016".

We are joined in person by Professor Steve Albon, Professor David McCracken and Professor Rory Putman and we will be taking evidence by videolink from Norway from Dr Duncan Halley. Can you hear us, Dr Halley?

Dr Duncan Halley (Norwegian Institute for Nature Research): Yes, I can.

The Convener: That is good. If at any point there is a problem, please so indicate and we will suspend the committee to re-establish the link, to ensure that you are fully involved.

Dr Halley: Okay, thank you.

The Convener: We move to questions. As the panel is aware, the subject of deer management and the SNH report has generated a good deal of heat. Today's evidence session is designed to assist the committee in cutting through the claim and counter-claim to get a handle on what the research tells us about the issue.

I ask each of you to set the scene by outlining your areas of expertise and commenting on any areas in which you might be open to the criticism that what you say is prejudiced because, in building up the experience that you have gained over the years, you may have come to a certain view. Let us start with Duncan Halley.

Dr Halley: I am a landscape ecologist: that would be the shortest description of what I do. I work on various aspects of landscape ecology, including grazing of sheep, deer and other animals.

Specifically on deer, I have worked on aspects of deer management in relation to red deer, reindeer, roe deer and moose in Norway, sika deer in Japan, and other ungulates: bison in Romania and buffalo in Africa.

My experience is entirely Norwegian. I moved to Norway 24 years ago. I am a Norwegian citizen and I identify primarily with Norway. I do not know the degree to which that might prejudice me with respect to Scottish conditions. I am used to finding myself off message with virtually everybody.

Professor Rory Putman (University of Glasgow): I am a kind of hybrid organism. For about 20 years, I worked as a university academic in the University of Southampton, in charge of the deer management research group. That was largely concerned with applied management issues: undertaking research that would support new developments in management.

I semi-retired from that about 22 years ago and came up to Scotland, where I have been working as a freelance environmental consultant and a deer management consultant. I have worked for a lot of private estates and I have helped a number of deer management groups to develop deer management plans, not only in the recent round, as some of the groups that I have worked with are now on their third iteration of a five-year plan—some of them were trying to develop collaborative plans some time ago. To that extent, I guess that my experience could be slightly prejudiced because I have spent a lot of time working with the deer management groups and private landowners. That does not mean that I am an apologist for them—there are some good ones and there are some could do betters. I hope that I can consider myself independent. I have had the experience of working as a practitioner as well as my continuing academic and research interests in deer management.

The Convener: Thank you very much.

Professor David McCracken (Scotland's Rural College): Morning, folks. I head up what we call a hill and mountain research centre within Scotland's Rural College. My background is that I have worked on agricultural system biodiversity and farming interactions across Europe for more than 25 years. Members of my team at the hill and mountain research centre have looked at grazing practices—particularly in the uplands and sometimes in woodland. We largely look at livestock and sheep grazing, but have also been involved with deer work in the past.

More recently, through 2016, we have been doing a project—jointly with the University of the Highlands and Islands centre for mountain studies—for Scottish Natural Heritage, the Forestry Commission Scotland and the Scottish Government, looking at the gaps in knowledge and understanding about sustainable deer management in Scotland. That is why I am here today.

Through the course of my career, I have worked—and still work—a lot with environmental non-government organisations and other stakeholders, and I sit on the Moorland Forum. A bit like Rory Putman, if I am biased in any way at all, I think that I would be biased towards traditional farming systems across Europe and the value that they provide. We are not biased as far as deer management is concerned—we try to take an objective look at things.

The Convener: Thank you.

Professor Steve Albon (James Hutton Institute): I am a population ecologist. I began my research career 40 years ago on the Isle of Rum working with Tim Clutton-Brock on the study of natural selection in the wild there. [*Interruption*.]—We seem to have lost Duncan Halley, as the videolink has gone off. I have worked at a number of levels, from individuals within populations to population ecology.

Nearly 30 years ago, Tim Clutton-Brock and I published a book, "Red Deer in the Highlands", which was the first analysis of the data collected at deer management area level. In that sense, I have a background in this type of work. I worked as a consultant for the Islay Deer Management Group after we published that book. I was the science adviser to the Association of Deer Management Groups, so I have seen both sides of the debate. Of course, if there is a conflict at the moment, it is that the James Hutton Institute, from which I retired two years ago, although I am an emeritus fellow, is a contractor doing some of the work covered in the report.

I have also worked in a wider context, because I chaired the Scottish biodiversity forum's science panel for a number of years and also chaired the United Kingdom national ecosystem assessment.

The Convener: Thank you. Can I confirm that Duncan Halley is now back with us?

Dr Halley: Yes, I am.

The Convener: I should have said earlier that if you wish to respond to any of the questions, you could perhaps indicate that that is the case on the screen, so that I know to come to you.

We will move on. Jenny Gilruth has a question.

Jenny Gilruth (Mid Fife and Glenrothes) (SNP): Good morning. Page 91 of the SNH report states:

"The data on deer populations are incomplete, with uncertainty over national population estimates for both red and roe deer."

Estimates in the report put the total deer count nationally at between 360,000 and 400,000 respectively. There is quite a substantial difference between those two figures. I know that SNH is working with the James Hutton Institute to give us a more up-to-date number, but does the panel consider the figures provided by the SNH report to be both accurate and relevant?

Dr Halley: The accuracy will be reasonably good, within broad limits. It depends on the degree to which you want accuracy. In Norway, we do not count deer in that manner. We measure directly the deer impacts or the impacts of density on the deer themselves—for example, on their weights—and we manage on that basis. It is a system called adaptive management.

My understanding is that the goal in Scotland is to reduce certain impacts while retaining the ability to hunt deer. That being the case, there is a case to be made for measuring directly the impacts and managing deer numbers until you have achieved the effect, as Corrour estate in the Highlands has been doing recently—it is an example of how to achieve that.

Professor Albon: I think that we should be concentrating on impacts, so I would not disagree with Duncan Halley. However, it is also clear that it is not possible to assess an impact unless we have at least some idea of the trend. We might not need to know the absolute number, but we need to know whether the number of deer in a location is going up or down or is constant. Therefore, it is necessary to have some form of counting assessment. It is true that we are not sure about the absolute accuracy of the estimates, but we hope that the biases in the way in which the deer are counted are consistent.

Jenny Gilruth: Sorry, what did you say about the biases, Professor Albon?

Professor Albon: We hope that the biases are consistent so that we can get an idea of the trend, even if we do not know whether that represents 80 per cent of the population or 95 per cent of it.

Jenny Gilruth: I would just like you to put on the record whether you accept that the statistics in the report are spot on or whether you think that we could be more focused in the data gathering. I appreciate that both of you have said that we need to look more broadly at the impact of deer, but I think that we also need to find out the numbers, as Professor Albon said. Do you believe that the numbers that are provided in the report are as accurate as they could be?

Professor Albon: I think that the national trend estimates are very good in the sense that the trend is well described. However, I could not tell you whether that trend represents 80 per cent of the animals. If the mean figure is 400,000 within those boundaries, under the current methodologies we cannot tell you whether that 400,000 is 440,000 or even 500,000. It would be possible to refine that estimate, but that is not the important thing. It does not matter whether there are 500,000 deer or 300,000 deer; what matters is the trend and the impacts, and the impacts are very much local things. There can be high-density areas where there might be little impact, but there can be relatively low-density areas with sensitive habitats where there might be considerable impacts.

Therefore, we must get away from totals. My overall message is that totals are not particularly

important, whereas trends are very important. We need information on the trends to represent the heterogeneity. We know that there is a tenfold difference in deer densities across the country. We are talking about red deer on the open hill range, because they are the only ones that we can really estimate. The circumstances will be very different in places that have 10 times as many animals.

The Convener: As academics, would you not want to base any of your judgments on the most robust and detailed statistical information that was available or could be gathered? Is there not an argument for having a proper deer count right across Scotland, in the Highlands and the Lowlands, on which we could base policy?

Professor Putman: In some ways, you have picked an impossible task, because—regardless of the species—estimating numbers of deer in woodland is extremely difficult.

You highlight one of the major issues to be brought out in the SNH report that we still have not addressed as a country, which is the problem of deer in the Lowlands. Almost all the focus with regard to deer management and encouraging collaborative deer management has so far been north and west of the central belt, in the uplands. To be honest, we are missing a huge trick in that we have not got to grips with what is going on in the Lowlands.

10:15

Picking up on your earlier point, I agree with Steve Albon—I think that we are all singing very much from the same hymn sheet. I am on the record as saying that the headline figure for the number of deer in Scotland, of whatever species, is not of huge relevance. In my view, trends simply enable us to see whether the management that is being undertaken is delivering the objectives that are sought. I still believe strongly that it is the impact that we should be concerning ourselves with.

Steve Albon makes the point that densities vary almost by order of magnitude between different parts of Scotland. In a sensitive habitat, even a low density can have a damaging impact. In other areas, high densities are having heavy impacts, but they might not be considered damaging if they do not conflict with the land use objectives that have been defined for the area. I strongly believe that we should not be working even on regional figures. We should be looking at trends in deer populations at a local level but, more important, we should be looking at the impacts and whether they are acceptable in the context of the surrounding land management objectives.

The Convener: If we gathered figures at a local level, they would all add up to give us a national picture. Whether we would make much use of that is another issue. We might not, but it strikes me in hearing all the evidence that a lack of information is the root of the problem. I will bring in Duncan Halley.

Dr Halley: I very much agree with the other witnesses on that subject. It is, of course, a good idea to have very good information, but it depends on what kind of information is relevant to the task at hand. I will give an example. In Norway, we have less of an idea than you have in Scotland of what our total population of deer and our densities of deer are, but we manage our deer populations to general satisfaction by collecting other data, for example on the weight and condition of the animals.

We have found through practice that, if the weight and condition of the animals are satisfactory by our standards, all the other things that you in Scotland have as goals follow more or less automatically. Therefore, most of our work in recent years has involved assessing the weight and condition of animals rather than trying to get measures of densities.

The Convener: Okay. Thank you. Professor Albon, do you want to comment?

Professor Albon: I agree with that point. I forgot to mention in my introduction that I have published three research papers on deer in Norway that look at trends in their body weight both regionally and temporally. We know that weight is a sensitive indicator of performance and that it is density dependent. As numbers rise, the weights will decline, and because weights decline, females have lower pregnancy rates.

I agree with Duncan Halley that it is useful to collect weight information, and many estates do that. The interesting thing in Norway is that it is organised through hunting groups and wildlife groups around the counties and they submit all their data to a central statistics repository, so they have very accurate information. Many estates in Scotland keep larder records—they have done it since Victorian times, because people then were interested in weights, in how many points stags had on their antlers and so on—so we could examine other data.

We could also refine the way in which the counts are done that give us the estimates of the numbers on the ground. We could get some error confidence intervals around the counts. If 1,000 deer are counted in a particular place, we should be able to say whether it is plus or minus 100. There are ways in which we could refine what is being done traditionally under a method that was developed in the late 1950s by the late Frank Fraser Darling when he was doing his west Highland survey. The methodology and the whole

approach could be refined and we could get better data. That would need some level of organisation, so it would need funding.

Alexander Burnett (Aberdeenshire West) (Con): I note my entry in the register of members' interests relating to deer management.

Good morning, panel. It is very good to hear you all talk about impact being more important than density. How concerned are you by a report that focuses on density, such as the SNH report? Are you concerned about some of the questions over the data in that report? Are you aware of other areas of scientific research that are based on such unreliable data?

Dr Halley: I do not characterise the data presented in the SNH report as unreliable. The SNH was asked by the previous committee to produce information on certain subjects, which it did in a competent and objective manner. From the data available, it is clear that the objectives that were specified by the previous committee to be met by 2016 about

"a step change in the delivery"—

I believe that that was the actual phrase—have, to a large extent, not been met. That is what SNH was asked to assess and that is what it did.

We must not lose the wood for the trees and the broad picture is clear. Deer populations impact a number of things that we would not wish them to impact. The way to deal with that is to reduce the population densities, which would have the effect of increasing the weight and productivity of deer, so, paradoxically, we would not lose the harvest level. The data on that seems reasonably clear.

I do not agree with the premise of the question. Given what SNH was asked to do, it has done a competent job.

Professor Putman: Sadly, I have already suggested on the record that there are a number of flaws in the SNH report. The flaws are not so much with the data that were presented, although data might have been available—although not presented—that would have offered a slightly more balanced judgment of events. What concerned me more was that some of the interpretations in the report did not seem to reflect the evidence.

There were a number of instances—my written submission notes some of them—where the report said, "All the evidence suggests X; however, we conclude the reverse of X." I find that inconsistency slightly worrying when a report is to be submitted to a parliamentary committee to enable members to make decisions about the way forward. You need the best evidence that you can get and perhaps the report was slightly premature. It might have been better to wait until the James Hutton Institute's work had been completed. Further, if the work that Professor McCracken is to report on had been completed, we would have had a fuller information base to work from. I do not entirely agree with Duncan Halley that SNH did the best job that it could have done.

The Convener: In fairness to SNH, it is worth getting it on the record that the timing of the report was determined by our predecessor committee; the Government accepted that and the Parliament ratified it. It is not really SNH's fault that it reported before that information was available.

Professor Albon: I will respond to Alexander Burnett's question. The data is not so unreliable; it is only unreliable in that we do not absolutely know how many deer there are in Scotland.

The Deer Commission for Scotland—SNH's predecessor—and, before that, the Red Deer Commission tried their utmost to be consistent in their approaches. As I wrote in the evidence that I submitted last week, the suggested reason why the population seems to have levelled off since 2000—which is that we now count largely by helicopter rather than on foot, so there is a disparity between the two methods—is simply wrong.

I went back through the 30-odd pieces of evidence that were on the committee's website on 6 January to review what was being stated, and misinformation is coming through. There is no difference between the counts that were done on the ground and the aerial counts. At three different sites, people trialled the same techniques at the same time and in the same place. One of those sites was on the Isle of Rum; as an island, it obviously has a closed population. Therefore I would strongly defend the analysis of the data that we were given.

There is more data, because many of the deer management groups attempt annual counts. However, I also know for a fact that counts are often not done over a very short period of time, and that different parts are counted by different groups at different times. There are comments written in the records saying that a count was a poor count and that some animals had been missed for whatever reason.

Therefore, although there is more evidence, we have to be careful in how we use the annual records. I want to be sure that people do not get the wrong impression. I have discussed with individual chairmen who have written to or approached us getting access to their data—not only the count data but also the cull data—so that we can analyse it and see whether the relationships that we see in their area are similar to those in areas where there is less frequent counting.

It is the case that the intervals between many of the official counts are too long. In our view, one thing that should be considered is a new rolling programme of counting.

The Convener: Would that be delivered by the DMGs or funded by SNH?

Professor Albon: There should be an integrated approach. When the Deer Commission for Scotland and its predecessor, the Red Deer Commission, did their ground counts, they had a team of, I think, six stalkers on the books. They went to deer management groups to recruit other stalkers, so they had teams of 12 or more men going across the hillside almost 100 metres apart, counting the animals before them. They had walkie-talkie control and could say, "We pushed a group here; have you seen it?" to avoid things such as double-counting.

I suspect that, if we do just helicopter counting, it would be less important to have local people on board. However, it would be valuable to try to get a truly collaborative approach between the statutory agency and the local industry on the ground.

The Convener: Where the information is out of date, what does the trigger point for having an update count need to be?

Professor Albon: I would hope that we could move to a system where we never had intervals of more than five years.

The Convener: Okay.

Professor McCracken: I want first to agree with the point that was made earlier. The timing of the SNH report was unfortunate, in that it was not able to take into account the other body of evidence. I also want to make the point that it is not a standalone report. A wide body of other evidence has been collected over the years to help inform us.

As a member of the team that worked on the gaps in knowledge and understanding, I was reassured by a lot of what was published in the SNH report. When it is read in total, it bears out what we found by speaking to people on the ground and through literature reviews.

In particular, in our report we highlight that habitat impact assessment has not been taken up much by the deer management groups, for a variety of reasons. The SNH report backed that up and showed benchmarking highlighting that. There has been an improvement, but there is still some way to go. That was one of the key points to come out of our report. Had the SNH report shown that deer management groups felt that they were utilising habitat impact assessment to best effect, that would have completely flown in the face of what we were finding on the ground.

Alexander Burnett: I was going to ask this question later, but you have just mentioned that you were involved in the gaps analysis in relation to the SNH report. The journal *Scottish Forestry* recently claimed that 40,000 hectares of planted ancient woodland sites were missed out of the assessment. Do you want to comment on that?

Professor McCracken: Missed out of which assessment?

Alexander Burnett: They were not included in the review.

Professor McCracken: That would be the native woodland survey of Scotland, back in 2012 to 2014.

Alexander Burnett: They were therefore excluded from the assessment of environmental impact in the SNH report.

Professor McCracken: I do not know. I cannot comment on that. I was not involved in the native woodland survey report, and the issue has not come up in any of the discussions that we have had over the past year with local land managers and scientists.

10:30

Professor Putman: That is the point that I was trying to make in answer to the question. Steve Albon has been talking primarily about whether there are gaps in the count figures, but that brings us back to absolute numbers, which I want to get away from.

I think that there were some information gaps other than simply in relation to numbers in aspects of the report. Alexander Burnett makes the point that perhaps the native woodland survey of Scotland missed a number of sites. Further, commentators including Steve Buckland at the University of St Andrews criticised the report on the ground that, in their view, the methodologies were bound to overestimate the number of sites that were not in favourable condition and were bound to conclude that deer were the major herbivore involved. The surveyors' protocols told them that, if they could not identify the browser that was causing browsing damage, they should record it as deer, and, if deer browsing was found on one tree in a polygon that was being surveyed, they were told to consider that 100 per cent of that area was threatened by deer. That shows that the methodologies were stacked towards overestimating the impact of herbivores overall, particularly with regard to the impact of deer. That is not my view—that was Steve Buckland's independent assessment; I do not know whether it was published, but it was submitted to the British Deer Society.

Mark Ruskell (Mid Scotland and Fife) (Green): I want to follow up on David McCracken's point. There is a lot of debate around population, counts, different ways to count, trends and data. However, my reading of the report suggests that a lot of SNH's conclusions are based largely on the actions that deer management groups have taken to tackle some of the issues. For example, from the public interest categories on page 69 of the report, it appears that only a quarter of deer management groups are involved in actions to manage herbivore impact. When SNH talks about a step change, is it focused entirely on the national, regional or local population density issue, or is the issue more about what could be classed as a failure of deer management groups to take the actions that are needed to bring about some of the changes that we want in terms of habitats?

Professor McCracken: I cannot speak on behalf of SNH, but my reading of the report was that much of what SNH was saying about not seeing a step change as being possible was based on its benchmarking assessment of how the deer management groups have been performing.

Dr Halley: I am rather concerned that the thrust of the questioning today rather loses the wood for the trees. The fact is that the grazing and browsing pressure in Scotland is generally too high to allow us to bring about the outcomes that we want, such as an improvement in forest conditions.

There is a giant natural experiment on this subject in south-west Norway, where the geology and climate are extremely similar to those of the Scottish Highlands. In 1949, the index value of grazing in that part of Norway was 100. At that time, the area was largely unwooded and old pictures from that time show that the landscape looked similar to that of Scotland. For various social and economic reasons, the index value of grazing pressure declined to 63 per cent by 1969, and has since increased to 71 per cent. At the same time, the entire region has largely reforested by natural means, a process that continues to this day.

Today, you are almost arguing about the details of the foliage rather than the wood. If you wish to bring about the things that you want to happen, you need to reduce the overall level of grazing pressure—that appears to be absolutely understood by everyone. Red deer are a substantial component of that grazing pressure.

Professor Albon: Duncan Halley makes very valid points. If we want to rewild Scotland and have much more natural forestry, we will clearly have to reduce the level of grazing and browsing. However, these are cultural landscapes that we are dealing with, and there are many people who value the current moors. They might seem barren to some, but we have had them for 200 or 300 years now.

I am not sure that we would necessarily want to recreate a so-called Norwegian landscape everywhere. We might want to increase the structural diversity and variety of habitats across Scotland, but we might also need to think about the best places to do that for a variety of socioeconomic as well as purely environmental reasons.

The Convener: We might be guilty of falling into the trap of thinking too much about upland deer, so I want to focus the end of this section on lowland deer. We have a significant problem with lowland deer in Scotland. Might the lack of available data be a problem in looking at the best approach to tackling the issue? We hear evidence from people on the ground about ways of addressing the issue that are more appropriate than those that are being deployed at the moment.

Professor McCracken: A whole host of questions is wrapped up in that question.

You say that there is a significant problem with deer in lowland Scotland, but I take it that you mean urban Scotland, too. Coming back to some of the answers that have already been given, I think that this is a significant problem because of the wide variety of ways—from vehicle collisions through to actual damage—in which deer in lowland urban and peri-urban areas impact on the environment. The report that we have highlighted makes it clear that we in Scotland and the rest of the United Kingdom do not know enough about estimating roe deer populations, certainly in peri-urban wooded environments, or how much damage they are physically causing to our woodland areas. We know that they are regularly involved in vehicle collisions, but we do not have a substantial database to inform us where some of the hotspots are. All we know is that, in certain places, it is an issue.

We have highlighted in the report that, in order to move forward, we need a better way of assessing roe deer population dynamics, not just numbers. Moreover, there is a variety of reasons why deer management in lowland urban and peri-urban areas is not being applied. A number of different models could be applied, but one of the fundamental issues is getting all the stakeholders in those areas on board and their coming to an understanding of what type of deer management is necessary and, indeed, why it is necessary. It is that "Why?" question that needs to be answered in order to get them on board, but I think—and this is off the top of my head—that the report mentions evidence from the United States of different models being applied, with urban and peri-urban dwellers getting why deer management is important in their area when the benefits to them

are made clear. Of course, those benefits might not necessarily be economic; they might have more to do with the reduction in Lyme disease or in damage to landscape plantings in their area. However, you need to get those people on board before you can move forward.

Kate Forbes (Skye, Lochaber and Badenoch) (SNP): I think that a lot of this has already been covered but, with regard to the disagreement about densities, what scientific evidence is being used by some of the deer management groups to query counts, and what scientific evidence is being used to support the James Hutton Institute model? I just want to take a step back here and ask what, in purely academic terms, the differences are in the scientific evidence that supports the conclusions that the deer management groups and the James Hutton Institute have come to.

Professor Albon: I think that the issue is a relatively simple one. We have taken all the available data in the so-called official category—in other words, the data that was done by SNH or its predecessors—and concentrated on describing the trends in space. We have then come up with an estimate and the point, as I try to illustrate in my submission and which was also used by the Association of Deer Management Groups, is that even on an island such as Rum, the numbers apparently go up and down around the trend and sometimes the number goes up by more than is biologically possible, given that there was a cull of X number of deer and so on, so clearly there has been an error in the individual counts, as we have described.

The problem is that the individual deer management groups tend to say, "We counted 3,222, which means that the density is 11.2 deer per square kilometre," while our estimate is that it is 12.7 deer per square kilometre. I used that example in my written evidence. That is remarkably close—it is about a 13 per cent difference. As a scientist who is used to handling quantitative data, I would say that that is really rather good. It is within what we might expect of our estimate. However, this is taken by the deer management groups as being too high—their attitude is that we are stating that the number is too high and we are going to beat them up over it. We are not saying that it is too high; we are just saying that we feel that, given all the fluctuations that go on and the uncertainties around any one count, that is not an unreasonable estimate. However, people get very passionate about that absolute number and feel that if the estimate is different from that absolute number, we must be wrong.

Professor Putman: I am nowhere near as good a modeller as Professor Albon. In my original written evidence, I raised some questions about where the figures came from. Steve Albon's subsequent submission last week clarifies things very well and makes it absolutely clear where in the more theoretical modelling work the figures are derived from and how the conclusions are reached. It is not terribly clear in the SNH report, because of course it was only working on interim results at that time—it did not have the final report. I think that Steve's written submission makes very good reading—actually, I was very impressed.

I know that a lot of the deer groups are concerned about it because they feel that it is rather theoretical and, having worked with many of them and having been on many of the ground counts with them, I know that they believe that they do a good job. Steve is right—they believe that if an independent theoretical analysis says that they have more deer than they think they have, they will be punished in some unspecified manner for that. I think that that is why they have been up in arms and have reiterated their own figures to make sure that people recognise that they think they do reasonably good counts and that those are the counts on which they base deer management.

The Convener: Sorry—does the comment that you just made not betray the root of the problem? Professor Albon's approach is independent and objective. With the greatest respect, the deer management groups may well be saying those things because they would say that, wouldn't they?

Professor Putman: I think that up to a point, that is right, although in my personal experience, a large proportion of the landowners—whether they are private landowners or community ownership landowners—and their stalkers, genuinely try to do a reasonably professional job. They try to get things right—they do not always get them right.

Steve Albon queried the data that I have summarised in a remark that

"helicopter counts routinely return figures about 60% higher than those returned by ground counts".

That is simply because the ground counts have not necessarily been very well carried out, which means that the deer management groups are then basing their management on false data. Deer management groups can criticise the more theoretical modelling because they are working from their own data—that data may be good or it may be flawed and it is a very difficult thing to reconcile.

10:45

Professor McCracken: What I say will potentially complement what Rory Putman has just said. This is just an observation. In the past year, we have intensively looked at the gaps in

knowledge about and understanding of sustainable deer management in Scotland, and we have talked to a wide range of people. As members will see in the paper that I submitted, we could have more accurate deer counts. We included that issue because it came up, but the vast majority of the discussion that we have had over the past year has not been to do with improving the counts per se but about improving understanding of how the animals move around the local area in response to the management that has been applied. That is where scientists, science and the managers on the ground see a gap in knowledge and understanding. It is not about the absolute numbers; it is about what is there, how the animals are moving around, what they are interacting with, and what that means for the damage that they might or might not be causing.

Professor Putman: I go back to the point about the lack of habitat impact assessments by the deer management groups and individual estates. That is a valid point but, in their defence, there has not been a tradition of doing them in the past. They were recommended by people on the Rural Affairs, Climate Change and Environment Committee and the ADMG, which backed that up. That is very useful information for sensitive future management. As Duncan Halley has said, people can manage better if they know what those impacts are.

Many of the new plans have been completed only in the past six months, so people have not really had a chance to start to do the regular impact assessments that we expect them to do in the future. Many of them—certainly the ones that I have worked on—are very committed to undertaking monitoring. People would prefer to do that themselves. In some cases, they realise that they do not have the skills and they are committed to employing outside consultants to do that for them across the deer group area.

I am not disagreeing with what has been said. The approach has been very poor in the past, but people have only just been asked to get their act together. SNH might be a little premature in saying that it ain't going to work, because many of the groups are on the first cycle of trying to implement habitat monitoring.

The Convener: Although I accept the point that you make, we as parliamentarians have been here before. The last time we considered deer, we were told, "Oh, well, but there's only been 18 months for the code of practice to be implemented." With the greatest respect, it always seems to be a matter of mañana. How long do we have to wait until we see serious and definitive action that produces results?

Professor Albon: My view is that the cup is half full. It is remarkable that upland hill red deer populations are not continuing to increase, because we are taking sheep off the ground that they used to compete for, and we have a more benign winter climate and longer and warmer summers, which should be better for vegetation production. However, numbers are not rising. Although I have been fairly circumspect, I am absolutely sure that the reason for that is culling, which the deer management groups have collectively increased. There has been a threefold increase in the level of culling over the period that we have data for, and culling is now at a higher level than it was with the so-called one-in-six cull.

That goes back to the earlier research on Rum, which was about managing the population. Over the years, a one-in-six cull was devised as way of keeping the population in balance at a more or less constant number. Whether that had any deleterious impact is another matter, of course. It is now clear from the data that there is a cull of around 17 or 18 per cent, which is more or less or a bit over a one-in-six cull. That is probably why we have not seen any further increase in numbers, despite the improvement in the environment, with less grazing competition from sheep and more benign weather.

The Convener: It depends on where the culling is taking place, of course.

Professor Albon: Indeed. It is very variable across the country, but there is no doubt—members can see this in the panel in the SNH report that has 15 graphs in it—that the populations have been successfully depressed in many areas. That was a preliminary analysis. Our latest analysis shows that, of 40 deer management groups for which we feel confident we have enough data to assess what is going on, 24 have decreased populations since 2000 and only 16 have increased populations. Twelve of those 16 had very low-density populations back in 2000, and they were not particularly of interest.

My view is that the cup is half full, as the industry has made a huge effort. That is not to say that there will not be any significant and challenging local impacts that will continually need to be addressed.

The Convener: That is an interesting bit of context—thank you.

Dr Halley: That takes us back to the issue of what you wish to do with your landscape. Professor Albon suggested that the Scots may want a different cultural landscape from the Norwegians. That is entirely valid—it is up to you to decide what kind of landscapes you want. You already intend to increase your woodland cover, carbon sinks and so on, which can be done by regeneration if you get your grazing pressures down.

By the way, I object to the term “rewilding” in relation to Norway, which is a working landscape, particularly in the south-west. The human population density in rural areas is between three and five times that of the Scottish Highlands.

The nature of the working landscape has changed—for example, we now extract timber and fuel wood as well as having deer on the same land that was rough grazing 50 years ago. Whether you wish to achieve that is up to you. Technically, it is not difficult to do. An example is the Corrour estate in the Highlands, which covers 230km^2 and has reduced its deer densities from 15 to five in eight years, using existing stocking staff. The number of deer that are taken by paying customers or by the landowners has remained stable during that period, and the weight of stags has increased by 36 per cent over time.

The technical issues in achieving that are not difficult—it could be done over a decade or so without too much trouble. However, arranging it from a social standpoint is, by a very great measure, the hard part, and that is where most of your effort needs to go. The technical animal management part is not problematic.

Maurice Golden: Following on from that, what factors impact on the number of deer that are culled each year by land managers, and what consequences—either intended or unintended—flow from that culling?

Professor Albon: Sorry—are you asking about Scotland?

Maurice Golden: I am asking the entire panel—whoever would like to comment.

Professor Putman: Perhaps I can kick off on that one. I work with a lot of deer groups to determine appropriate target populations for their ground, for individual estates and for the group as a whole, and to determine appropriate cull levels, either to maintain populations at the desired level or to effect a reduction if it is felt for other reasons that that is necessary.

Most private estates have historically had expectations of a certain stag harvest. If an estate is managed for sporting interests rather than simply being involved in deer management to protect forestry, it will expect a certain number of stags. It will then develop a hind population to produce the appropriate recruitment of calves to grow through the age classes to be culled. Such estates usually try to target the culls to maintain the hind population at a stable level or, if the population has grown too high, to reduce it.

Over recent years, there has been a significant change. I have been working with those estates for 24 years now, and I have noticed a change in attitude. They are now much more aware of environmental impacts and at least some of the public interest benefits that have been defined more recently. They have increasingly tried to reduce deer population densities to levels at which they can still deliver their private objectives while the impacts on the environment are minimised.

That is not to say that the estates are getting it right—I still think that they are probably not—but, to go back to what the convener said, one of the biggest issues that we all face as we move forward is the need to reconcile private interests and public interest objectives, and to get the balance correct. You have got to have both. If there is private land ownership and the landowners are subsidising the management to a significant degree financially, they have an expectation that their private objectives will be taken into account to some extent, even if they acknowledge that they also have to deliver in the public interest. Getting that balance is going to be really difficult.

The Convener: Is that not an argument for SNH taking the principal role in setting culling targets?

Professor Putman: We are actually approaching something very close to the Norwegian system, which Duncan Halley described in his written submission, and which I was aware of before because, like Steve Albon, I have worked quite extensively in Norway.

Duncan Halley will correct me if I get this wrong or if I oversimplify it but, in essence, in any area a group of landowners can get together if their properties collectively cover some biological population of deer and form a deer management unit. If they do not do that, the regional administration can define a management unit. Once that is done, the landowners are invited to develop a deer management plan that will deliver their objectives. That is then scrutinised by a regional wildlife board, which then overlays public objectives on that and makes sure both that the management proposals are sustainable and that they deliver public interest. If the proposals do not do that—if the landowners do not come up with a credible plan, or one that is approved by the regional wildlife board—the regional administration can develop that plan for them.

I am sure that that oversimplifies the position but, to an extent, that is the model that we are approaching very closely with the new set of guidelines that has been rolled out for the deer groups to deliver.

Maurice Golden: Duncan Halley has mentioned that, in Norway, there are potentially five deer per square kilometre. In broad numbers, what are deer density levels here? Are we looking at a number nearer five or nearer 30, perhaps? [*Interruption*.]

The Convener: I am going to suspend the meeting temporarily, because we have lost the connection to Duncan Halley. He cannot answer, because he has not heard the question.

10:57

Meeting suspended.

10:57

On resuming—

The Convener: Duncan Halley, you will not have heard the point that Maurice Golden was making. I am going to ask him to reiterate it for you. Please accept our apologies for the failure in the videolink.

Maurice Golden: I wonder whether we can get an indication of likely deer density levels: whether they are somewhere closer to—as Duncan Halley has suggested is the case in Norway—around five deer per square kilometre, nearer 30 deer per square kilometre or somewhere in between. I wonder whether it is possible to add that degree of accuracy as regards culling.

Professor Putman: I think that I have already answered that question in making the point—

The Convener: Sorry—I will let Duncan Halley answer that question first.

Dr Halley: Where we have done detailed studies on population densities, we believe that there are around five to six deer per square kilometre, in general. Our offtake is around one third of the population each year, because mortality outside the hunting season is practically zero and fecundity is very much higher. Many more calves are born per year and they survive better than is the case in Scotland.

I will talk a little about the Norwegian model. What has been said is true, but the Norwegian model is not voluntary. There are sanctions if someone does not meet the plan that has been set by the district council for their deer populations, and they will lose money for not doing so. In Norway, our social situation—who has the hunting rights, the scale of land ownership and so forth—is very different, so motivations are very different here. In an extreme case, someone can be fined an unlimited amount or be sent to jail for one year, but I have never heard of that being done for something like that. Such penalties are usually applied for poaching or for other very serious offences. In Norway, poaching is certainly not a Robin Hood crime: it is like someone stealing a car from their neighbour.

11:00

Our system is not voluntary, and we would find it odd if it was. The analogy that I have used to describe it is that we do not expect trucks to be regulated by voluntary associations of hauliers. We do not think that hauliers are bad people, but other society interests come into consideration and the overall plan that is set by the district council has to be adhered to. In the development of the plan, there is normally close co-operation between the district authority and the landowners. That works harmoniously in practice.

I am often asked what sanctions we have. They are quite drastic in theory, but they are never applied. Typically, if something goes wrong and the landowner concerned does not have a plan, one will be issued to them by the district council and they will be expected to achieve it. If they repeatedly do the same thing, given the scale of management, the district authority will put up the quotas for other people, and the landowner will lose money.

In the social context, if a landowner is not dealing with their deer properly, that is like their being a bad farmer and having a field full of weeds. They live in an embedded society in which they are part of the local community, and their family will have been there for a long time. That alters the whole social context. There are many social sanctions that keep the system running, but those are backed up, at least in theory, by formal sanctions from the district government, which ultimately sets the number of deer that ought to be taken. Adherence is required.

The Convener: Are those agreements with individual landowners, or are they with a collection of landowners? We are talking about DMGs.

Dr Halley: The scale of land ownership in Norway is very different. We do not have anything like estates of 100km^2 or 200km^2, although those landowners that are large enough may have a hunting beat of their own. The whole country is divided up into hunting beats, and smaller landowners must combine with other people to organise that. Large landowners can do that themselves, and they have been encouraged to do so in recent years. If they have what is called the minimum area, they are within their rights to have a quota set for themselves alone. In practice, however, several landowners tend to get together, as that provides greater flexibility. There is also more flexibility for the harvest if landowners have a plan as opposed to having a quota issued to them by the district council.

The Convener: I presume that you do not have some of the issues that we have in Scotland whereby there may be adjoining land ownerships

with highly competing views among them as to the appropriate densities.

Dr Halley: No, we do not have that problem. There is less of a disjunct in Norway between the advantages of having deer and some of the disadvantages. Typically, the same individual owns the woodland, so, if any damage is caused to the woodland, that damages him. He and his children drive to and from the schools and other places on the roads, so, if there are lots of car accidents, they are impacted by that. There is therefore less of a disjunct, and that creates less conflict. There is less disagreement in Norway about what the deer densities should be.

There was a general consensus 10 years ago, when we started to see weight reductions of about 5 to 7 per cent among the red deer population. It was generally agreed that the population needed to be managed down, because those weight reductions were being caused by competition for food. There were also other side effects, including a higher incidence of road accidents and damage to forestry.

Essentially, the social context in Norway is different because the people who gain and the people who lose from deer activities are the same people.

Professor Putman: I return to the original question of what might be suitable densities in Scotland. The answer is that it is almost impossible to determine the densities that will create maximum diversity or favourable conditions because those differ markedly for different habitats. Even within the same habitat, they differ in different locations depending on the productivity of the soil, the slope and the aspect.

So many abiotic factors contribute to the growth success of a given habitat and its diversity that the impact of a given density of deer grazing is going to be very different. Indeed, that might even be the case in the same kind of habitat. For dry heathland, for example, you might want fewer than six deer per square kilometre on the west coast, where it is much wetter and the heather is already struggling, whereas, on the east coast, you might be able to tolerate a density of 11 to 12 deer per square kilometre without any negative impacts. Do you agree, Steve?

Professor Albon: Yes. In some of the east coast heather habitats, there have been 20 to 25 deer per square kilometre and there has been significant browsing damage and loss of heather, which has led to erosion and loss of peat and carbon. We have enough data to make some adjustments, but the question is whether 11 or 12 deer per square kilometre is the answer or whether that figure needs to be brought down in some places. It is difficult to do that, but that is what adaptive management should be about. We should look at the available evidence, say, "Given the circumstances, let's take the densities down to this or that level"—indeed, that is basically what some of the section 7 agreements have been about—and then review the situation. If it is not working, it can be adjusted further.

As I have indicated, we face a very dynamic situation with the reduction in sheep grazing, the more benign winter environments and the longer and more productive summers. The thing about deer management is that it will always have to adjust to such dynamics.

The Convener: The SNH report says that section 7 agreements are not working.

Professor Albon: I do not think that any of those agreements have failed to meet the collectively agreed cull target. The issue might be that we have not seen sufficient reduction in the impact. In an adaptive management sense, therefore, we are getting information that tells us that we need to lower the levels. I do not think that that necessarily means that the agreements are not working—it has to be an adaptive process.

Finlay Carson (Galloway and West Dumfries) (Con): Can the panel point to any studies in which sustainable deer densities have been identified for specific land management objectives? On the back of that, how easy is it to do that when, as we have heard, land managers have multiple objectives and also need to consider the public interest?

Professor Albon: That is a really good question. I have already mentioned that I was an adviser to the Islay deer management group 20-odd years ago—before Rory Putman took the role on, I think. The issue in that case was that the group wanted everything. It wanted trees, for example, and, ideally, it would have got grouse back, but that was not really feasible in that particular environment. It is difficult to achieve that sort of thing in one go. I should point out that the group was not the deer management group for the whole island; it was the individual estates that had those objectives.

I want to raise an issue that has not yet been referred to. The Scottish moorland landscape is such that we have a heterogeneous mosaic of little patches of habitat. Some of them will need very light grazing, but those patches are right next to habitats that will need heavy grazing—and vice versa. It is really difficult to make those adjustments, and I suspect that, at the end of the day, we will have to work together in a broad stakeholder group to introduce some form of zoning and prioritise a particular type of land use in one area while prioritising another type of land use in another. We will have to accept that we will

not get everything in one place but will get more of this here and more of that there. We must be pragmatic. People need to understand that it is nigh impossible to get everything everywhere.

Finlay Carson: The theory might be right, but are there any specific case studies of people trying to achieve that?

Professor Albon: Rory Putman might be better qualified to comment on that.

Professor Putman: There probably are if we look at the history of the better deer management groups. Many of them failed, and the wake-up call that they received was probably timely. I think that a number of them were trying to deliver that sort of thing in the past by doing exactly as Steve Albon has suggested in carrying out adequate monitoring of impacts on vegetation—not on the general range but primarily on designated sites and habitats. That was usually the focus in the past. As Duncan Halley has mentioned, they also monitored weights of culls and trends in numbers.

In other words, the groups undertook what is widely called adaptive management—that is, they tried something and, if it did not deliver what they wanted, they adjusted it a bit until it did. Without going back to my files I cannot give you examples of specific estates and groups that were successful in that respect, but I think that some of them were reasonably successful in at least trying to allow management to be monitoring led, if I can put it that way.

Dr Halley: Again, the Corrour estate is possibly the best example that I am aware of in Scotland. It has reduced its deer densities and has quantified what it has done and a great deal of the response to that. It would be nice if someone could thoroughly investigate that in a structured, scientific manner. The estate's records are pretty good, and it has shown that the reduction in densities has been accompanied by various responses with regard to the quality of the heather sward, populations of red grouse and so on. That is an example of a stimulus—a reduction in the deer population—and the response to it having been measured. In terms of its definition of what it wishes to achieve, its approach appears to be achieving results.

The Convener: That is a good point. Is there a danger of our being a bit too insular in Scotland and not looking at apparent good practice and, where it can be adapted, adapting it for elsewhere?

Dr Halley: The Corrour estate is in Scotland. I am trying to find a way of being polite—[*Interruption*.]

The Convener: That is unfortunate. I suspend the meeting to allow Duncan Halley to come back.

11:12

Meeting suspended.

11:13

On resuming—

The Convener: I think that we are back.

Dr Halley: Can you hear me?

The Convener: Yes, and you were about to be impolite. Please continue.

Dr Halley: Present company excluded—I mean that seriously—there has been a surprising tendency in Scotland towards parochialism in this debate. Scotsmen tend to pride themselves on being outward-looking people but, when examples such as Norway are highlighted, the response tends to be, "Ah, but Norway's got a lot of oil," or something else that invalidates everything.

The point of making comparisons with, say, south-west Norway is not that Scotland should replicate it in every respect—I would be unhappy if that were to happen—but that, given that the climate and geology are close to identical, there might be lessons to learn that might be transferable for one's purposes. In that respect, I am talking about the way in which we use adaptive management or some of the ways in which we can reduce social conflicts. I do not really mean deer management, which is relatively consensual, but our ways of reducing social conflicts in other areas, which might be applicable to the situation.

11:15

Much of the debate in Scotland seems to revolve around false premises that could be invalidated by looking at other countries. Although you might reasonably desire the Scottish landscape to be open—if that is what you value—you cannot reasonably state that it is natural. I have had it stated to me a number of times that Scotland—especially the west of Scotland—is treeless because it is too wet or too windy. South-west Norway is even wetter and windier but it has great amounts of regeneration, even though it was deforested for millennia, which invalidates that argument. It also tells you the limits of the possible, though whether you wish to achieve that is entirely a matter for yourselves. Norway is a cultural landscape; so, too, is Scotland, and what is desirable for you is up to you. However, other countries can inform you better about what might be possible.

The Convener: I will allow in Claudia Beamish. Hers is probably more of a tangential than a supplementary question, but she wants to ask it while we have a good videolink with you.

Claudia Beamish (South Scotland) (Lab): Page 2 of your submission says:

"It must be doubted whether the aspiration of regarding land as a precious asset that 'benefits the many, not the few' can be fulfilled if Scotland remains at the bottom of the European class with the least regulated system of deer management."

In the next paragraph, you say:

"*All*"—

the emphasis is on "All"—

"landowners have a *responsibility* to *control* deer".

Will you comment on those two aspects of your written submission? I believe that that might inform our committee deliberations.

Dr Halley: I do not recall that I wrote what you have cited.

Claudia Beamish: I apologise if I have made an error.

Dr Halley: I provided a short, two-page submission previously, but I did not write anything along the lines of it being able to be doubted that—

Claudia Beamish: I will just withdraw that comment. I apologise.

Dr Halley: I have not commented on the structure of land ownership in Scotland.

Claudia Beamish: Right. We will leave that there. Do you—or anyone else on the panel—have comments on the public interest issue and any tensions or conflict with private landowners that that might lead to? What contribution should private landowners make to the costs of dealing with those issues?

The Convener: I want to clarify that the text cited by Claudia Beamish is on page 2 of Dr Halley's submission.

Dr Halley: Will you explain to me where it is?

The Convener: It is the 10th paragraph of your written evidence.

Claudia Beamish: It is on page 2.

Dr Halley: Are you talking about the submission that I made for this particular meeting?

The Convener: Yes.

Professor McCracken: You submitted supplementary material to the committee, too, Duncan.

Dr Halley: Sorry?

Professor McCracken: Supplementary material of longer length was submitted on your behalf, too.

The Convener: Yes, it is supplementary evidence—it runs to 14 pages.

Dr Halley: Yes, I am looking at that. The 10th paragraph discusses the Norwegian Government's market for wild game meat.

Claudia Beamish cited me as saying that the current system of land management can be doubted. I made no such statement.

The Convener: Let me read back what I have in front of me:

"It must be doubted whether the aspiration of regarding land as a precious asset that 'benefits the many, not the few' can be fulfilled if Scotland remains at the bottom of the European class with the least regulated system of deer management.

We need to develop a deer management culture everywhere. *All* landowners have a *responsibility* to *control* deer".

Dr Halley: I think I recognise that from the forest policy group's evidence. It is not my evidence.

The Convener: I apologise if there is a mistake in what we have in front of us.

Dr Halley: I am entirely certain that I did not say that.

The Convener: Let us move on. Emma Harper will ask the next question.

Emma Harper (South Scotland) (SNP): I was interested in the fact that the SNH report focuses on deer management. Deer are not the only herbivores that lead to overgrazing and our failure to meet our native woodland replanting targets.

Does the panel think that there is enough scientific evidence to argue that deer pressure is the main factor explaining the lack of progress in meeting native woodland planting and restoration targets?

Professor McCracken: I will start, and Steve Albon and Rory Putman might want to come in on the point.

Within our gaps analysis, we have identified that assessing accurately which herbivore is causing impact is very difficult in many cases. We recommend in our report that there needs to be more work done to help differentiate deer impacts per se from those of other herbivores. As Emma Harper has said, that would inform decisions about which is the main herbivore that is causing the damage and what that means for deer management plans within that particular site or area.

The Convener: Is that not also the root of the problem with section 8 control schemes, because they require that it must be absolutely clear which herbivore or which deer had caused the damage before a section 8 can be implemented?

Professor McCracken: Possibly. No section 8 control scheme has been implemented in Scotland.

The Convener: That is believed to be one of the reasons why such orders are not proceeded with.

Professor Putman: I am pleased to know that the report from the SRUC will identify that issue as a gap. Often when surveyors of open hill communities look at herbivore impacts, they do not find it easy to distinguish between impacts from sheep and from deer. They tend to rely on the relative abundance of dung, which can be confidently ascribed to one species or another. Professor Buckland was quite critical of the way that the protocols for the "Scotland's Native Woodlands: Results from the Native Woodland Survey" overemphasised deer in comparison to other herbivores.

I know that Steve Albon published in 2007 an analysis of the relative impacts of sheep, deer and other herbivores on open hill communities.

Professor Albon: Certainly it is possible to distinguish cattle, sheep, deer, hares, rabbits and so on. Emma Harper's question is really more addressing the failure to meet the target of having 100,000 new hectares of forestry by 2022.

I do not think that deer will be the issue in a failure to meet that target. There is commentary from one or two individuals who disagree with the formal bodies such as the Scottish forestry group and say that the issue is not deer but more about the strictures of getting permission to plant, getting the grants necessary to go ahead and so on.

There are two issues: can we minimise the damage within existing forestry and can we get more woodland cover? Natural regeneration would take a long time. If we want to meet the target of 100,000 additional hectares over 10 years, we will certainly have to fence and keep deer out.

Mark Ruskell: You mentioned the national woodland survey. Would you agree with its overall conclusions? It states that:

"Reducing herbivore impact is the biggest single issue to be addressed to improve native woodland health and survival."

It goes on to state that:

"Deer are by far the most widespread type of herbivore recorded and are likely to be the major source of impacts."

It seems that we can get into discussion about individual states, habitats and environments, but do you agree with the overall conclusions about the status of deer as it relates to native woodland regeneration?

Professor Putman: I agree with the first conclusion, that herbivore impacts are one of the most significant factors that cause lack of favourable condition in native woodlands. However, as I have noted, the critiques that have been made of that survey already highlight that the level of impact is likely to be overestimated given the methodologies that are used. The proportion of impact that is attributed to deer is likely to be overestimated because of the methodologies employed. It is not my analysis—it is that of Steven Buckland and others—but there is room to doubt the second of those statements: that it is primarily deer. Deer are indubitably a contributing factor but we do not actually know which major herbivores across Scotland are responsible for loss of favourable condition in woodlands.

Mark Ruskell: Are there any other comments?

Professor Albon: That might well be true but I would also hazard a hunch that it is deer that are having that impact. The question is whether it is changing. For sure, Forestry Commission rangers have put in a phenomenal effort in culling and you can see that in the statistics in the report. It is a significant offtake and it would interesting to do some what is called catch-per-unit effort, which might indicate whether the numbers are still rising or whether they are going down, bearing it in mind that it is difficult to estimate numbers in woodlands.

The Convener: Everyone has said what they want to say, but before we move on I have an apology for Dr Halley. Claudia Beamish asked the question in good faith because that was what she had in front of her, and all the members have that as your evidence. It was clearly not the evidence that you submitted, so please accept our apologies. We will make sure that that is corrected as required.

Claudia Beamish has a more general question along those lines.

Claudia Beamish: Apologies again for the situation that has occurred.

I wanted to know from Dr Halley and the other witnesses about any tension between the public interest, particularly in relation to biodiversity and road traffic accidents, and the interests of private landowners as you see them, and whether private landowners should be making a more significant contribution.

The Convener: Who wants to answer?

Professor McCracken: I have two points. To begin with, I have just realised that I was remiss at the beginning when you were asking about areas of interest, because I should have declared that SRUC is a member of the Breadalbane deer management group at our Crianlarich facility.

It has already been said. Deer management is one of those areas in which there is always going

to be conflicts of interest between the wide variety of people who are involved. Some people look at deer management from an economic perspective because that is part of their business model. The Breadalbane deer management group primarily looks at deer management from a pest control perspective because we want to keep deer out of the montane woodland that we planted 17 years ago, and we want to improve the uplands species-rich grassland in the Breadalbane hills.

It is a fact of life that, in these sorts of issues, there will be such tensions. The challenge is to address them and bring people together as much as possible in a consensus around what is required at the broader deer management group level.

Claudia Beamish: The committee and the previous Rural Affairs, Climate Change and Environment Committee, which I was on, is and was aware of the tensions. I am still trying to delve into any comment that witnesses might have about the responsibility of private landowners and the financial contribution that they might make. Is the contribution appropriate at the moment? Does anyone want to comment on that?

11:30

Dr Halley: I left Scotland 24 years ago—John Major was Prime Minister at the time—so it is not really for me to comment on the deer situation there. In Norway, the system is funded primarily by the national hunters licence that people have to buy every year in order to go hunting, and in the districts by what are called tag fees for red deer. At present, the fee is £39 per red deer. It amounts to a tax that is paid to the district council. Those things defray nearly the entire costs of the system. The employees of the equivalent of SNH are paid from the public purse, but the rest of the system is paid for by the system itself. That is not controversial in Norway, but I cannot comment on the social situation in Scotland in that respect.

Where red deer affect a wider group of people, as with any other aspect of social and economic life it is not considered appropriate to have voluntary agreements, with one section of the community deciding what the appropriate offtake is. What happens in Scotland is a matter for you, but in Norway we would find it unusual if our landowners alone were responsible for setting the offtake. Ultimately, it is set in close co-operation with landowners, but it is set by the district—the local community.

Professor Putman: Under the UK and Scottish system, deer technically belong to no one—what belongs to the landowner is only the right to take deer—so it is very hard to make a case that landowners should pay more than they already pay to subsidise wider landscape management.

I want to comment on the evidence on deer and vehicle collisions, as I worked on that project for about 10 years and I continue to work on analysis of the factors that increase the risk of accidents. Local deer density is low on the list of factors that contribute to the risk. Obviously, if there are no deer, there are no accidents, and if there are lots of deer, there is a higher chance of an accident, but the actual risk is much more associated with things such as whether there is woodland close to the road edge and whether there is woodland on one side and good grazing on the other, which encourages animals to harbour on one side of the road and then cross to forage on the other side. Another factor is the tortuosity—I think that that is the technical term—or twistiness of the road, and therefore whether deer can see vehicles coming and drivers can see them far enough in advance to brake. Those factors have a huge impact on the probability of accidents, but deer density comes quite low down on the list.

The Convener: We will move on to a different subject with Mark Ruskell.

Mark Ruskell: We have had some discussion of the relationship between deer densities, stag carcase weights and the general welfare of deer. Is there a consensus on the applicability to Scotland of the data that Duncan Halley has been presenting? I note that the long-term study of deer on Rum points to higher fecundity rates where there is lower density, for example. Does the general principle hold that the lower the density, the healthier the deer?

Professor Albon: The situation will vary depending on the type of habitat that the deer are grazing on, as was mentioned earlier.

Professor Putman: I would like to distinguish between fitness and welfare. It is certainly true that, in resource-restricted conditions, body weights fall and productivity—the number of calves produced per adult female—is reduced, so the population dynamics change. However, that does not necessarily mean that the wellbeing of the individual deer is compromised. There is quite a distinction between ecological productivity, evolutionary fitness and actual welfare—in other words, the suffering or wellbeing of individual animals.

Mark Ruskell: If there is a broad consensus on that, I am struggling to understand where the impact is on private interests. Twenty years ago, the then Macaulay Land Use Research Institute did a study that concluded that

"large decreases in numbers of hinds can be achieved without incurring a loss of revenue from stalking."

Where is the conflict between the public objective of reducing deer densities—for example, to encourage native woodland regeneration—and the impact on the income that estates get from shooting stags?

Professor Albon: I will have a go at that. We have alluded to the fact that it is probably necessary to have only four or five red deer per square kilometre to get natural regeneration of woodland. As Rory Putman said, that population will be very productive—there will be high calving rates and higher survival levels, so there will be lots of recruits to shoot.

However, it is true to say that, where there is significant interest in trophy shooting in non-wooded areas, there will be higher densities. The work on Rum that you alluded to found that male survival and growth were most impacted. There is a differential between the sexes in the loss of productivity as density increases. The males, which are the weaker sex, are more likely to die or be stunted and so on. It is possible to produce more males that are larger by reducing densities but, if that was a sporting estate's prime reason for taking such action, the density level would probably be too high to allow natural regeneration of woodland. In that sense, there is a conflict.

Professor Putman: There is increasing awareness that, in the past—10 or 15 years ago—many estates carried far more hinds on the ground than they needed to. The figures that the James Hutton Institute has been working with show that numbers have been deliberately reduced over the past 10 to 15 years, to the extent that I do not think that it is generally true that, across different parts of Scotland, hind numbers are still far too high for the public objective or the private objective. Many of the deer groups and private estates that I have worked with have made a conscious effort to reduce hind populations. Sometimes, those populations have been reduced by as much as 50 per cent—a number of estates have done that.

Dr Halley: I have an observation to make. I have to respectfully disagree with Professor Albon. In south-west Norway, our stags are demonstrably larger, very much heavier and have very much better trophy heads at a young age, and the densities there are fully compatible with the natural regeneration of woodland. A great deal of evidence indicates that that is the case.

Professor Albon: I will not get into an argument with Duncan Halley; we can agree to disagree.

I will come back to the point that Claudia Beamish raised. There is a difference between impact and loss of biodiversity; they are not necessarily the same thing. On Rum, in the study population from which much of our detailed knowledge of deer in Scotland comes, the numbers have risen and the productivity has fallen. The impact on particular grasslands is extremely severe; they will fail the site condition monitoring criteria because they are too short, but they are incredibly diverse. There is no indication that there has been a loss of species; it is just that they do not look as beautiful as they do on the machair of the west coast, where there are beautiful flower meadows in the middle of summer. That is because the offtake has removed all that.

Another point that I made in my submission on impacts and natural heritage is that, rather ironically, although sheep have been the villains in the past because of their impact on heather moors and grasslands, we have evidence from where sheep have been taken off the grazing and deer have come in to fill the vacuum that that increases the impact on adjacent heather. Remember my description of the mosaics—they are pockets of herb-rich grasslands that are surrounded by heather. Sheep dominated them and the deer stayed away; then sheep were removed and the deer came in. When deer are not feeding on grasslands, they have a bigger impact on the heather swards around them—sufficient impact to lose diversity of plants.

We are dealing with complex and dynamic interactions. We sometimes need to distinguish whether an impact, although it is deemed undesirable, does not necessarily mean that we lose biodiversity. People often confound those things. We clearly want to avoid loss of biodiversity—we are obliged to avoid it—and we have to be aware that herbivores have a major potential impact, but that is not the same as having a high impact.

David Stewart (Highlands and Islands) (Lab): A lot of the earlier questions have—rightly—been on research because, for parliamentarians, research is the handmaiden of policy. Have we got our research right? In other words, are we asking the right questions? I have in mind the Keynes line that, "As the facts change, so do my opinions." Are we missing a trick here and are there gaps in the market?

Professor McCracken: Yes. As you can see in the written evidence that I presented—it includes draft conclusions from the report that we have done for SNH, Forestry Commission Scotland and the Scottish Government—we were asked that very question. They asked us to look for gaps in the research that would be needed to inform sustainable deer management going forward.

We stated in the submission—or it might have been in the full report—that the vast majority of gaps that we found were not research gaps in that there was a lack of understanding or of

information; rather, there were gaps in knowledge exchange or communication. We know a lot about what we need to do collectively to manage deer more sustainably across Scotland. However, that information is not known about, is not accessible or has not been translated into a manner that would allow land managers, their advisers and other people to take it into account.

In what we have submitted, we say that it is probably one third about research gaps and two thirds about getting our combined act together in translating information to help people to manage things better on the ground or to inform their deer management plans. As I said in relation to the habitat impact assessment, we do not need more work on the detail of assessing how much a habitat has been impacted, but we need much more training and skills development for people to feel confident about understanding the process, interpreting it properly and developing it into their deer management plans. It is not just private owners delivering deer management who need to understand it a lot better, but everybody involved in the process. That is just one example.

David Stewart: The issue is much more sophisticated than just a gap in research; there is a gap in attitudes and in training.

Professor McCracken: Definitely.

David Stewart: Is there a gap in perceptions between private and public interests?

Professor McCracken: There is a gap in understanding where every individual is coming from. There is perhaps a misperception of where one person might be coming from versus where another is coming from—a lot more needs to be done to pick that apart. That is not about research as such; it is just about getting people into a room with a facilitator to talk through and understand what their objectives are and why they have them and to find a common way forward. That is possible—conflict management does not apply only to deer management; there is a long history of conflict management in research, practice and application.

David Stewart: If I correctly understood the earlier answers, there is too much emphasis on absolute counting of deer; the approach should be more about trend management, which is vital, and the effect on habitat. Is that a fair summary?

Professor McCracken: Yes, very much so—the approach is about impacts and understanding. Counts and trends are important, but more important is what is happening at a local level—however one defines that—regarding how the deer move and react to their environment, to the weather and to the management that is applied to them, and whether they go to preferred areas.

We need to understand that better at a deer management group level, and it needs to be incorporated into the existing modelling process. That approach has been shown to vastly improve the accuracy of the predictions about where the deer are likely to be and what needs to be done for them.

11:45

David Stewart: Notwithstanding what I just said about numbers, you raised the technical point that remote sensors are important. Would you emphasise looking at that area?

Professor McCracken: The idea that remote sensing might have a role to play, either in complementing actual count numbers in the open habitat or, importantly, in helping local deer management groups to understand the changes that have happened in the habitat over time, came up in our discussions. Somebody who is out in the landscape every day does not necessarily see the subtle changes that are happening. If they can step back and see what the landscape was like 10 or 20 years ago, what it is like now and where they are trying to get to, that can help to inform the thinking. A lot of deer management, as with any other management, is simply about helping people to step back and think a bit more deeply about what is actually happening on their land and on their neighbour's land, and what they want collectively to try to achieve.

David Stewart: Do the other panellists want to comment?

The Convener: There seems to be agreement across the panel.

David Stewart: I think that the witnesses have been stunned into silence.

Professor Putman: We discussed the issues before we came into the meeting, and it is clear that we are all very much singing from the same sheet. We all agree that the most important features are the trends in local populations, the impacts of local populations and the interpretation of those elements in relation to the objective that has been declared for the landscape area that is under consideration.

Professor Albon: Yes—I agree whole-heartedly. I am not sure whether the figure is one third or two thirds, as I was not part of the review. Nevertheless, we have knowledge that is often not translated, and as academics we have a responsibility to help with that translation. We are not the only ones who have that responsibility, but the information must be put out there, and not only in learned journals. My colleagues and I—and others, I am sure—have written for the *Deer Journal*, which is the British Deer Society's

quarterly magazine, and for other such publications. We try to translate knowledge where and when that is appropriate, but I am sure that we could do more if only there was time.

David Stewart: Does Duncan Halley wish to come in?

Dr Halley: The question is very much about conditions that are internal to Scotland, so I do not think that I can add anything useful.

David Stewart: My final question is about the SNH report, which was mentioned earlier. I would like you to clarify one key point. Do you feel, given the quality of the report, that it provides a good evidence base for policy making? That aspect is vital to us as parliamentarians.

Professor McCracken: The first element of policy making is to have a discussion, and the report has certainly started the whole discussion rolling by unpicking things in a lot more detail. As I said earlier, I urge the committee not to see that one report in isolation; there is a wider suite and body of evidence out there to help to inform policy making per se.

Dr Halley: Given the report's remit, I think—as I said before—that a competent and professional job was done. If you wish to achieve the things that you have identified, reductions in deer density will, broadly, be necessary to achieve them.

Professor Putman: I am on record as having found a number of things about the report that make me somewhat uncomfortable. However, what David McCracken said is pertinent: if the report has done nothing else, it has stimulated debate and stimulated the committee into seeking independent assessment from others. That is important. Personally, I would like the entire report to be put out for wider peer review before the committee has to make any decisions about future actions but, given the committee's timescale, there might not be time for that to happen.

Professor Albon: Of course, I will vigorously defend our bit of the analysis, which was of status and trends. We have agreed that the SNH report was rushed because of a timetable that was set two years ago and that it was submitted before we were able to finish our work and before the current SRUC review was completed. If we regarded the published report as a beta version and if we got another version, we could tighten up on some of the concerns that people such as Rory Putman have expressed.

From the point of view of the Association of Deer Management Groups and its members, the concern is that the report is damaging for the journey that they are all on. I sat on the association's executive committee five or six years ago, so I can see where it is coming from in feeling a bit disenfranchised. The groups have made a big effort and are willing to do more. We need a bigger collaborative effort and should sit down together to decide what societal objectives we have for our different landscapes across the country.

Our role as a scientific panel is not to say whether, in terms of prioritisation, one aspect of society should be dominant rather than another. If we collectively decide that we want to do something in one area and something else in another area, our role as scientists is to advise on how to get those different outcomes. However, above all else, we need to collaborate and have a dialogue.

The Convener: Okay. I have a question with which to wrap this up, and I will give each of you a minute for a response to it. Based on the current scientific evidence, the approaches in other countries that could be adopted or adapted and your considerable experience, how should we best proceed to get the deer issue addressed once and for all?

Professor McCracken: I will step forward. Clearly—I would say this—we have just finished a report that identifies the priority gaps in delivering what was recommended in "Scotland's Wild Deer: A National Approach". On the aspiration for Scotland, as I said on record at another meeting, I expect that, after the priorities for research and, in particular, knowledge exchange have been identified, an action plan will be developed that addresses the issues. We have identified what would help to move the whole thing forward. I cannot say whether that would move it forward to the step change that you require within the timescale that you require, but we have certainly identified key areas that we think would help the whole discussion. I am not referring to the debate that we have been having—we need to move on from the debate phase into a moving forward phase. We have identified a wide range of issues that we feel need to be addressed, which would strongly help the continuing effort to deliver through the deer management groups.

Dr Halley: The most that we, in Norway, can offer is comparison—not so much among scientists as among landowners, people who manage deer professionally and so on, very few of whom have ever been here. I have hosted several trips in Norway in recent years as the debate has hotted up in Scotland. Visits and exchanges of information can provide ideas and new ways of thinking that can show that things that might have been thought not possible are possible. If it were possible to increase exchange in that way, that might help to inform the debate in Scotland.

Professor Albon: I mentioned that my career began 40 years ago on Rum. I remember headlines, particularly in the Scottish press, such

as “Too many deer on the hills”, although the densities then were much lower than they are now. There is something called the deer management round table, which is a talking shop that brings together a fantastic cross-section of interested stakeholders including Ramblers Scotland. As a society, we need to debate what sort of landscapes we want. We have the knowledge and ability to create those, if we so choose, but we must sit down and make an agreement rather than continue to talk about it decade after decade. We need some mechanism that would push that.

I have also been involved a bit in the land use strategy—at least, in commenting on it—but, rather sadly, there is no implementation plan for it. If we could move forward by stepping back, as many people are suggesting, to look at the issue more holistically, we could make big inroads. I am not sure that the land use strategy is a policy as such, but we certainly have a land use strategy that is supposed to be overarching. We should use it and develop an implementation plan that deer interests and all other land-use interests can be part of.

Professor Putman: I agree with Steve Albon that we must tailor something that works for Scotland and for Scottish objectives, both private and public. As the committee might know, I undertook, with colleagues in Italy and Norway, a review of deer management systems across more than 30 countries in Europe, which was published in 2011 by Cambridge University Press. In essence, there is a limit to what we can take from those examples other than rather different management structures. The different management systems resolve, in effect, into five basic models with a greater or lesser degree of state control. However, all of them have associated advantages and disadvantages and they all deliver some but not all of the things that you seek to deliver. All of them get hung up on the conflict between the delivery of private objectives and the delivery of public objectives.

As Steve Albon said, we have come a long way in the past two or three years. We have made significant changes in the way that we expect deer managers and deer management groups to behave, which is going very much in the same direction as the situation in Norway that Duncan Halley has described. A number of my colleagues in Norway tell me that, although that is the theoretical system in Norway, it is still rather a work in progress and there is still work to be done to make it better. I think that we are in exactly the same position and are engaged in a work in progress. I am not an apologist for the current system. As I said, my work over the years with estates and DMGs tells me that there are some good practitioners out there and some who could do a lot better, who have had a bit of a wake-up call. Like Steve Albon, I am optimistic that our cup is half full and that we will see positive developments over the next few years through the changes that we have already brought into practice.

The Convener: Gentlemen, I thank you very much for your evidence today. In particular, I thank Duncan Halley for his forbearance with the technical issues and apologise again for the mix-up over his written submission.

The committee’s next meeting will be on 24 January, when we will take further evidence from SNH on its report “Deer Management in Scotland”. We will also take evidence at that meeting from Scottish Government officials on the “Draft Climate Change Plan: The draft third report on policies and proposals 2017-2032”.

As agreed earlier, we move into private session. I ask that the public gallery be cleared, as the public part of the meeting is closed.

11:58

Meeting continued in private until 12:25.

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