OFFICIAL REPORT
AITHISG OIFIGEIL

Rural Affairs and Islands Committee

Wednesday 15 March 2023

Session 6

The Scottish Parliament
Pàrlamaid na h-Alba

Wednesday 15 March 2023

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RURAL AFFAIRS AND ISLANDS COMMITTEE

8th Meeting 2023, Session 6

CONVENER

*Finlay Carson (Galloway and West Dumfries) (Con)

DEPUTY CONVENER

*Beatrice Wishart (Shetland Islands) (LD)

COMMITTEE MEMBERS

*Karen Adam (Banffshire and Buchan Coast) (SNP)
*Alasdair Allan (Na h-Eileanan an Iar) (SNP)
Ariane Burgess (Highlands and Islands) (Green)
*Jim Fairlie (Perthshire South and Kinross-shire) (SNP)
*Rachael Hamilton (Ettrick, Roxburgh and Berwickshire) (Con)
*Jenni Minto (Argyll and Bute) (SNP)
Mercedes Villalba (North East Scotland) (Lab)

*attended

THE FOLLOWING ALSO PARTICIPATED:

Mairi Gougeon (The Cabinet Secretary for Rural Affairs and Islands)
James Hamilton (Scottish Government)
Ross Lilley (NatureScot)
Kevin Matheson (Scottish Government)
Professor Des Thompson (NatureScot)

CLERK TO THE COMMITTEE

Emma Johnston

LOCATION

The Mary Fairfax Somerville Room (CR2)

Scottish Parliament

Rural Affairs and Islands Committee

Wednesday 15 March 2023

[The Convener opened the meeting at 10:00]

Decision on Taking Business in Private

The Convener (Finlay Carson): Good morning, and welcome to the eighth meeting in 2023 of the Rural Affairs and Islands Committee. I remind members who are using electronic devices to switch them to silent.

We have received apologies from Ariane Burgess and Mercedes Villalba.

Our first item of business is a decision on whether to take agenda item 5 in private. Do members agree to do so?

Members *indicated agreement.*

Subordinate Legislation

Alcoholic Beverages, Fruit and Vegetables (Miscellaneous Amendment) (Scotland) Regulations 2023 [Draft]

10:00

The Convener: Our second item of business is consideration of an affirmative instrument. I welcome the Cabinet Secretary for Rural Affairs and Islands, Mairi Gougeon, and her officials: Kevin Matheson, policy manager in the food and drink industry growth team, and James Hamilton, a lawyer.

I invite the cabinet secretary to make an opening statement.

The Cabinet Secretary for Rural Affairs and Islands (Mairi Gougeon): Thanks for inviting me to speak about the regulations. On 28 February last year, the United Kingdom signed a free trade agreement with New Zealand. During negotiations, the UK committed to making three minor changes to domestic legislation on how wine and other alcoholic drinks are described and marketed.

The Scottish Government remains of the view that the best option for the UK as a whole and for Scotland is the one that Scotland voted for—that is, remaining in the European Union. The Scottish Government's default position is to align with EU law where appropriate and where that is in Scotland's interests. However, as a responsible Government, we are required to observe and implement the United Kingdom's international obligations. The instrument is required to implement the New Zealand free trade agreement.

The changes that are set out in the instrument will bring some flexibilities to how wine and other alcoholic drinks can be labelled and marketed. However, it will not impact on the practices that are currently employed by producers and traders, who can continue to label and market as they currently do.

The changes allow producers and sellers of wine and other alcoholic drinks slightly more flexibility in respect of the information that they choose to include on their labels. The instrument will make three changes to retained EU law.

First, the instrument will allow any wine product to show alcoholic strength to one decimal place—for example, the strength could be 12.2 per cent or 12.7 per cent. Retained EU law currently limits wine to being labelled to show alcoholic strength to whole or half units—for example, 12 per cent or 12.5 per cent. That will continue to remain a possibility for wine that is marketed here or exported.

The concession to label wine to a single decimal place is not new. That possibility was already extended to Australian wines by the EU in its wine trade agreement with Australia, which the UK retained after exit.

The instrument will also introduce a change to rules concerning the labelling of grape varieties for wine that is marketed in Great Britain. It will require that, where more than one grape variety is listed on a wine label, the named varieties must total at least 95 per cent of the content of the wine. Current retained EU legislation requires that to be 100 per cent. The changes will mean that up to 5 per cent of the content may consist of varieties that are not shown on the label.

The changes that are proposed in the instrument will provide businesses that market and produce wine of multiple grape varieties with the scope to vary the production of a wine, to bring improved consistency and quality. UK domestic wine producers have warmly welcomed the flexibility that that will bring.

The regulations will also allow flexibility in how the terms “alc”, or alcohol, and “vol”, or volume, appear with the numerical alcohol content on wine and other alcoholic beverages. The current rules require that “alc” appears before the numerical alcohol content of the drink and “vol” after. The instrument will allow the term “alc” to appear after the numerical alcohol content of the drink.

Together, those changes will facilitate the trade between the UK and New Zealand. They may also help smaller producers in both countries who might wish to exploit a niche for their product in the market but for whom the size of the order would mean a full label change that would not be economically viable.

I stress that the changes are optional. We expect that many in the industry with established markets in Northern Ireland and/or the EU will continue to label and market wine as they currently do to support sales in those markets.

The Scottish Government consented to a Great Britain-wide consultation seeking views from stakeholders in the sector and more widely on the proposal, and the UK wine industry firmly supports the changes set out in this instrument and welcomes the flexibility that it provides.

I hope that I have said enough to assure members of the need for this instrument. It represents just one part of the changes being made that will allow the new free trade agreement with New Zealand to come into force, but in making those changes we have taken the opportunity to give our thriving wine and alcoholic drinks sector flexibility that will support it to trade in the future.

Finally, the instrument also amends article 11 of retained regulation (EU) 543/2011 to correct a minor error that is contained in regulation 5(5) of the Agriculture (Retained EU Law and Data) (Scotland) Act 2020 (Consequential Modifications) and Agricultural Products, Aquatic Animal Health and Genetically Modified Organisms (EU Exit) (Amendment) Regulations 2022. I am happy to take any questions that the committee might have.

The Convener: Well done on the title of that regulation. We will move to questions. Do you expect that more such Scottish statutory instruments to implement trade agreements will come to this committee?

Mairi Gougeon: There is what is set out in the Government’s legislative programme, obviously. You will have seen the debate on the legislative consent motion that took place in the Parliament yesterday, and this instrument is coming forward, but I will ask Kevin Matheson to say whether we expect any more, particularly in relation to food and drink.

Kevin Matheson (Scottish Government): No, I am not expecting any. Trade deals with Canada, India, Mexico and Israel are under discussion, and those might filter down, but I have not been given a heads-up about any.

The Convener: It seems a bit odd that the only SSI that we have to deal with on a trade deal comes down to labelling and the content of the wine or the grape varieties that are used. We drink Australian wine as well, so is this a result of the flexibility within retained EU law or were there already concessions for Australian wine but not New Zealand wine?

Mairi Gougeon: As far as I am aware, New Zealand asked for this during the negotiations primarily to benefit some of the smaller producers that provide mainly for the home market at the moment but could see an opportunity to export to the UK.

James Hamilton (Scottish Government): The EU and Australia have a trade deal that covers wine, which was rolled over by the UK, so that trade deal with the EU and the UK already provides some of the flexibility that we see in this deal, such as the ability to label wine to 0.1 of a decimal point, so we already see that flexibility in other trade deals that the EU has.

Mairi Gougeon: I also point out that, in its negotiations with New Zealand, the EU is looking at similar changes with greater flexibility with regard to, for example, the percentage of the grape variety that should be on the label.

The Convener: Okay. So, one of the main reasons for this SSI is that existing legislation dealt with the issue with regard to Australia,

because there was an EU deal with Australia, but similar regulations did not exist within EU legislation in relation to New Zealand. I get that now.

James Hamilton: The EU labelling regulations provide for exemptions for trade deals that the EU has done with other countries, so some of those are already incorporated, and the Australian deal, in particular, has been rolled into the UK agreement with Australia. Therefore, New Zealand not having had a trade deal is potentially an outlier. This will give New Zealand the flexibility that it has asked for, and the deal that it has negotiated with the EU has the same flexibility that is going through the EU ratification process at the moment.

Rachael Hamilton (Ettrick, Roxburgh and Berwickshire) (Con): I think that you have probably answered my question about the flexibility. I was going to ask you whether, within the free trade deal, this is one way of ensuring that New Zealand can export multiple grape varieties, which it probably does not do at the moment. The main varieties are probably Pinot Noir, Merlot and Sauvignon—we have a great taste for those in the UK—and there is the issue of the alcohol content, too. I assume that, as you say, this provides flexibility.

However, within a free trade agreement, surely it also removes the burden of labelling and provides help with that to allow greater choice, which provides flexibility. I presume that that makes a great free trade deal and that that is one of the negotiations that they had. Weather might also affect the grape variety and the alcohol content.

Mairi Gougeon: It also provides more clarity and transparency on the percentage of alcohol, which the lower-alcohol-volume producers have also welcomed. Other varieties can be used to up the consistency of the wine product, but producers on both sides have welcomed that.

Rachael Hamilton: Good.

The Convener: As there are no other questions, we move on to our third agenda item, which is formal consideration of the motion to approve the instrument.

Motion moved,

That the Rural Affairs and Islands Committee recommends that the Alcoholic Beverages, Fruit and Vegetables (Miscellaneous Amendment) (Scotland) Regulations 2023 be approved.—[*Mairi Gougeon*]

Motion agreed to.

The Convener: Is the committee content to delegate authority to me to sign off our report on our deliberations on the regulations?

Members *indicated agreement.*

The Convener: That completes consideration of the regulations. I thank the minister and her officials for attending.

We will suspend briefly to allow a change in witnesses.

10:11

Meeting suspended.

10:13

On resuming—

Future Agriculture Policy

The Convener: Our next item of business is pre-legislative scrutiny of Scotland's future agricultural policy. Our evidence session will focus on biodiversity, and we will take evidence from NatureScot. I welcome to the meeting Ross Lilley, head of natural resource management, and his colleague Professor Des Thompson, principal adviser on biodiversity and science, who join us remotely.

As normal, I ask you to type R in the chat box if you wish to speak. Given that there are only two of you, allowing that should not be too difficult. We have approximately 60 minutes for questioning. I thank you for joining us.

I will kick off with a broad question. Will you give us an indication of the drivers of biodiversity loss within agriculture? What changes have driven that loss historically? What practices have led to the decline or maintain pressures on biodiversity today?

We will kick off with Ross Lilley.

Ross Lilley (NatureScot): Actually, may I refer that question to my colleague for an answer?

10:15

The Convener: That is fine.

Professor Des Thompson (NatureScot): Good morning, and thank you for the question.

Agricultural intensification is one of five principal drivers of biodiversity loss, not just in Scotland but globally. To answer your question directly, it is the intensification of agriculture that is putting considerable pressure on biodiversity. Agricultural intensification reduces the amount of space that is available for nature and reduces the available time for birds—especially farmland birds—to breed successfully. Overall, the intensification of agriculture reduces space and time.

The Convener: I should declare an interest as a former farmer.

Twenty-five years ago, there were schemes to help farmers to fence off watercourses, increase field margins, fence off wet areas, rebuild dykes and stop cutting grass until later in the season. Methods of cutting grass, such as starting in the middle of the field rather than starting at the outside and working your way in, were introduced. Why have those interventions not caused a halt or slowdown in the decline in biodiversity? Why is there still a rapid and concerning decline?

Professor Thompson: It is because of the scale of the changes that you have described. The changes in watercourse management and introducing field margins are very helpful for sustaining bird life but, if you sit back and think about farmland birds such as lapwings, oyster-catchers, corn buntings and skylarks, you will realise that they need very large areas of farmland in order to breed successfully.

Small, piecemeal efforts to improve farmland will not help biodiversity as a whole. The awful thing now is that we have an extensive database that shows that we have lost many of our farmland birds and pollinators because we have not been able to transform agriculture at a sufficiently large scale to benefit many of those birds.

I give the example of skylarks and the production of silage. Often, the repeated cutting of silage does not provide space and time for skylarks to build nests, lay eggs and rear chicks successfully.

The Convener: You are saying that, for the past 20 years, farmers have been encouraged to undertake certain activities in a certain way but, in effect, that has been a waste of time because they were not done on the scale on which they should have been done. When did you realise that that was the case? Why was more not done sooner?

Professor Thompson: Farmers realised the plight of biodiversity more than anyone else. You are a farmer, and I know and talk with many farmers. Many of them are heartbroken at seeing the changes. Birds such as lapwings in rural areas are red-listed birds now. Those declines have been charted since the 1970s and especially since the 1990s, and we now have a biodiversity crisis. Governments in Scotland and globally have referenced the climate and nature emergencies, so we now have the courage and conviction to say, "Actually, this has to stop. We need to transform the way that we manage the land in order to halt the loss of biodiversity."

Ross Lilley: We have had 50-odd years of the common agricultural policy, which has been a very effective European policy that has been applied in the UK in that it has driven and supported farmers to be ever more efficient and effective food producers. That was the fundamental purpose of the common agricultural policy. In latter years, it sought to achieve other public outcomes, but with a very compartmentalised approach.

On the one hand, the main driver of support is ensuring that farmers are resilient and that their income is supported for food production; on the other hand, they are asked to put land aside for nature and other public interests. That system is not going to continue to work in our current climate, and it is not going to allow farming to

deliver the multiple public outcomes that we need from it.

Instead, each aspect makes farming less resilient, which means that, from a food production point of view, with the changing climate that we have now, let alone future climate change, the systems that—[*Inaudible*.]—as they used to be in terms of food production. Combining that with managing land for nature or using nature systems would not only make food production more resilient but restore the biodiversity loss that we have had over the past few years.

The Convener: Jim Fairlie has questions. He will be followed by Rachael Hamilton.

Jim Fairlie (Perthshire South and Kinross-shire) (SNP): I want to go back to the point that Ross Lilley has just made about intensification, if that is okay. We are talking about a whole-farming approach—that is, one that goes across the industry—but it is a fact that, if you take just two farms, the climate and biodiversity challenges that each faces will be different. Indeed, there will be different climate and biodiversity challenges on just one farm alone, never mind the challenges facing a full-scale system.

I am going to talk predominantly about semi-upland, upland and hill farming. If we are saying that intensification is part of the issue with regard to biodiversity loss, I would just point out that you cannot get farming that is more about landscape than those kinds of farming. Why, therefore, are we seeing the same drop in numbers in upland farms as we are in the big, intensive arable farms?

Ross Lilley: Of course, a lot of the upland farming habitats and the species that depend on them are far more sensitive than they are elsewhere, and even a small change in farming intensification has an impact on them. However, you are right. We have, for instance, seen quite a significant drop in sheep numbers on some hill—[*Inaudible*.]—farm support has been changed—[*Inaudible*.] In other areas, we still have quite high livestock densities. From the point of view of the types of habitat restoration that we need in the uplands for climate and biodiversity reasons, such as woodland regeneration and peatland restoration, the numbers are still too high. However, that is not to say that there is no sustainable form of upland or hill livestock management. After all, we do not want the abandonment of hill ground by rural livestock, because there is a fundamental need to keep habitats open and diverse. There is a sweet spot to be hit there.

Jim Fairlie: I am glad to hear you say that you do not want there to be no livestock in those areas—I should declare an interest as a hill sheep and cattle farmer and a shepherd for 30 years.

Has any consideration been given to predation of wading and ground-nesting birds? I have experience of what happens to lapwings, curlews, redshanks, golden plovers and so on when there is an influx of ravens. I used to have to mark where the nests were as I drove round my lambing fields but, by the time I had come out of all that, raven numbers had exploded and there was literally no point in doing that work, because there were no full nests. Have you considered what predation has done? I know that RSPB Scotland will deny that it happens but, anecdotally, I have witnessed the huge effect that it has had.

Ross Lilley: Do you want to answer that, Des?

Professor Thompson: Yes. Your observation with regard to predation is spot on. Very considerable work is being done on waders, in particular, at the moment.

Waders such as golden plovers, lapwings, redshanks and snipe are facing a number of pressures. There is the loss of heather, for example, and fragmentation of upland landscapes, especially piecemeal forestry. Very small areas of forestry will encourage nesting by crows, for example. From just one or two tiny stands, crows—and, indeed, foxes—can wipe out whole populations of lapwings. The science points to ravens not being such a problem as crows and foxes, but things vary considerably from area to area.

To go back to your original observation, it is really the fragmentation of the upland landscape that is encouraging predation and the trampling of nests by deer in some areas and by sheep in a very few areas.

Jim Fairlie: Does that not highlight the complexity of the situation? We are trying to get farmers to buy in to woodland creation and to have timber as part of their ability to make a living off the land, but that will contribute to a decrease in the number of wading birds. If we are going to do that properly, we do not want wholesale hill planting; we want that to be done in stands that will create shelter belts and environments for wildlife, but the same environment will create a breeding ground for predators that will wipe out the ground nesters.

Professor Thompson: You describe very neatly what might happen. In relation to forestry, it is therefore absolutely vital that there is resourcing of predator control. That is very important. In many areas in which we have lost lapwings, the only change that we have seen in the landscape is a couple of shelter belts. On the face of it, they appear to be perfectly innocuous, and they are often very well managed, but they provide cover for predators such as crows and foxes. Finding a way of managing predation in such areas and

providing suitable support would make a great difference.

Deer are another issue. In some areas in which there are very small plantings, cover for deer is provided. Even in the lowlands—never mind the uplands—we have seen a marked increase in the number of deer. We need sufficient resourcing for deer control.

Rachael Hamilton: On 13 May 2022, I visited a grouse moor in my constituency of Ettrick, Roxburgh and Berwickshire. The owners practise managed muirburn and they have an active grouse moor below which is a farmer who has a lowland farm of mixed livestock enterprise. I will read to you a list of what I saw on that day: lapwing, oyster catcher, curlew, golden plover, snipe, heron, red-legged partridge, black grouse, red grouse, corvids, meadow pipit and whinchat. I have never seen such a large amount of biodiversity in my entire life, and it was a fabulous experience. That proved to me that a managed farm, a decent stocking density and the rest of it, including the managed upland, was working. I just wanted to make that point.

My question is on where the biodiversity loss is occurring. Are we calculating biodiversity loss across Scotland and the islands, including marine, when we talk about these things, or are you talking specifically about agriculture when you cite intensification? The 60 per cent decline in curlew numbers is twice the rate of the decline in England. Why is that the case if we have similar agricultural practices? Is the agri-environment climate scheme reversing biodiversity loss?

The Convener: Who would like to go first on that?

Ross Lilley: If Des Thompson starts, I can then talk about AECS.

Professor Thompson: First, I thank Rachael Hamilton for that observation. That is what I see on a number of grouse moors and other well-managed hill farms, especially for waders such as curlew. It is just such a joy to see curlew and lapwing in those areas.

You contrasted England with Scotland. One fundamental difference between the two is that we have more forestry plantings in Scotland. I come back to my argument about the crow and fox predation that is particularly associated with those areas. Had you visited grouse moors in the north of England, you would have noticed much more extensive tracts of grouse moor, and much less forestry, and therefore much less risk of predation for the nesting waders. That is one observation that I would make.

To make another, rather harsh, observation regarding the birds that you have mentioned, since 1994, we have lost 50 per cent of our kestrel, lapwing and greenfinch populations in Scotland, as well as 50 per cent of our oystercatcher and rook populations. I mean—rooks, for heaven's sake! We might think of how common they are, but there has been a halving of their population.

Across the board and across the Scottish landscape, we are witnessing some really awful losses, and that brings into sharp focus those areas that we may visit that are extremely well managed and where we are managing to sustain those wonderful bird and pollinator populations.

10:30

Rachael Hamilton: Is there a geographic pattern in that, and is that taken as a whole when making calculations?

Professor Thompson: We are very fortunate, because of the work done by the British Trust for Ornithology and RSPB, to be able to provide regional statistics. We can contrast numbers in the north-east of Scotland with those in the south-west of Scotland, for example. We can contrast islands with the mainland. There are some marked regional differences. For instance, we are seeing some very worrying trends in declines of upland waders in parts of north-east Scotland. Even there, however, where good management is in place, there are thriving populations.

I will home in on one area and one bird that we are extremely concerned about: corn bunting in the Western Isles. The corn bunting is an absolutely marvellous bird, with a fascinating life cycle. It is one of the latest breeders that we have. We now have only about 1,000 singing males. There was a healthy population in the Western Isles, but the chances are that we will lose the corn bunting from the Western Isles. The corn bunting in the Western Isles has such specialised habits that it is now viewed as a sub-species, and it is globally important. In other words, there is an outlier population in the Western Isles. Unless there is active intervention with some straightforward measures put in place to improve the overwinter food supply and to look after the nesting habitat that is so important for those birds, we will lose the corn bunting from that wonderful area of Scotland.

I highlight the corn bunting because it has a very distinctive song. As a breeding bird, it is fascinating. The male can have up to seven or eight females in its nesting territory, and the birds vary considerably in their productivity. Going back to the 1930s and 1940s, people would hear corn bunting singing at virtually every rural railway station they might go to to catch their train in the morning. I doubt there are more than five rural rail

stations in Scotland where we can hear those wonderful birds singing now.

That brings into sharp focus the awful loss of biodiversity that we are witnessing in Scotland at the moment. In each part of Scotland we can point to small stories like that. We know what is causing the decline, so we need to put in place adequate resourcing.

To return to an earlier point, farmers are witnessing and decrying those changes more than anyone else. They are the people who need the support to recover our biodiversity.

The Convener: We are—

Rachael Hamilton: Can I ask Ross Lilley about AECS?

Ross Lilley: AECS has been an exceptionally good scheme, providing the deep and narrow support that farmers need. It provides specific support for particular measures, but it is highly prescriptive. Because of its limited nature and limited funding, forming only a small part of the past common agricultural policy series of schemes, it can generally only be applied in very small areas of a farm. A broad-brush approach is required for a lot of species, with measures at the sort of scale that Des Thompson has described.

Moving on to talking about future agricultural reform, the programme needs to build in broad and shallow measures that farmers would like to adopt, complementing the specific habitat measures that the scheme currently supports.

The Convener: We will get over this section, which is all about the devastating loss, to consider some of the important solutions.

Just before we move on, I would note the pressures on land and land price. The CAP has driven farmers to try and get as much as possible out of the land that they own. Given the cost of land, many farmers are trying to improve the land that they have. As a result, in many areas, and particularly Dumfries and Galloway, hedgerows are being pulled out, knowes are being taken off and fields are being flattened at a rate that we have never seen before. I am not blaming farmers; they have to maximise their output from the land that they have. However, who is responsible for ensuring that there is compliance: the planning department, the Scottish Environment Protection Agency or NatureScot?

No one appears to take any responsibility for compliance when there are questions about whether rocky knowes that have been categorised as unimproved would require an environmental impact assessment before they are removed, or whether fields that have not been ploughed for decades or more should revert to being classed as unimproved. There should be regulations in place that prevent that type of land clearance from happening. Who is responsible, and what is NatureScot doing to make sure that, right this minute, a bulldozer is not in a field destroying a habitat forever?

Ross Lilley: That is mostly regulated through agriculture payments. If a farmer claims under the basic payment scheme, the good agricultural land condition should cover those aspects. Obviously, that would then fall under the work of the rural payments and inspections division. If land sits within a protected area, or a site of special scientific interest, NatureScot has a role in enforcing the minimum conditions for an SSSI.

The Convener: Does NatureScot do any enforcement? Do you have examples of where the organisation has gone in and said, “Wait a minute, this is unimproved land. This has not been ploughed before. You need an EIA”?

Ross Lilley: Within the EIA process, RPID has picked up a number of cases in the past about improvements to permanent pasture, which is a gate condition. We have used the Nature Conservation (Scotland) Act 2004 to enforce SSSI conditions.

The Convener: Alasdair Allan will, I hope, move on to something more positive.

Alasdair Allan (Na h-Eileanan an Iar) (SNP): I will certainly do my best, convener.

I agree that we have heard a lot about the problems, and I am keen to hear about whether there are existing solutions that we can build on to an extent. As I am prone to do, I will mention crofting. There are mown grassland schemes and other forms of less intensive agriculture that are helpful to species such as ground nesting birds. Which of those schemes can we build on in future? Professor Thompson mentioned the corn bunting; I am thinking of corncrakes. I represent the Western Isles, so I can recognise what you are saying. However, my origins are in the Borders and my father could remember being kept awake at night routinely by corncrakes when he lived on a farm in Berwickshire. There have been huge changes. What forms of agriculture or agricultural support should we be building on?

Ross Lilley: We recognise that crofting is a good system that produces multiple outcomes for the public. It is a way of life and a way of farming that is about not only food production but all the other things that you have mentioned. We want to continue to support crofting, or the crofting style of management, as a model to follow.

One of the issues that we have had with the way that farming has been supported through the CAP is the fact that there has not been the chance for the individuals—farmers and crofters—who are

best placed to join the dots with land management to do that in such a way that the land can be best used and can secure the multiple outcomes that the public are looking for from farming. The way that schemes have been run and developed means that farmers and crofters have chased them individually; integration has happened at a national policy level in terms of what is prescribed, measured and incentivised, rather than on crofts or farms.

A way of supporting that type of farming in the future could be trying to delegate the responsibility for joining the dots—so, joining funds and public support and making those things work best for the individual farmers in the circumstance that they are in. An example of where that worked quite well with regard to crofting was the environmentally sensitive areas programme, back in the 1990s and early 2000s. It involved a clear prioritisation exercise in particularly distinctive biogeographical regions. As you will know, there was an ESA for the machair regions of the Western Isles and the Argyll islands that articulated the particular priorities for the area, with corncrake, machair and machair croppings the key priorities for the Western Isles ESA.

It reassured crofters that, if they entered into the scheme, they would be able to take measures that were relevant to them, with the biodiversity and farming interests in the area being delivered. In another ESA—the Borders, for instance—hedgerows would have been the priority, but that would not have been relevant to the Western Isles. That same sort of regionalisation and move to put more power into the hands of crofters and farmers so that they can make the funds work for them in their circumstances is where we want to go.

The Convener: Thank you. We move to questions from Rachael Hamilton.

Rachael Hamilton: I have asked my question on that specific section, convener.

The Convener: Okay. Beatrice, did you have a supplementary on this?

Beatrice Wishart: I think that it has been answered.

The Convener: I call Jenni Minto.

Jenni Minto (Argyll and Bute) (SNP): My questions have been answered, too. As I represent Argyll and Bute, I was very interested to hear those comments about regionalisation and making things fit for purpose for different types of farming.

If it is okay, convener, I will move on to the next section of questions.

The Convener: There is a question on data collection to be asked.

Jenni Minto: My apologies.

Are there any gaps in data collection? Is data collection consistent across Scotland, or are there specific areas where you need additional information? If so, how can that be achieved?

Ross Lilley: I will kick off on that, and Professor Thompson can perhaps come in later.

What we do not have is comprehensive and detailed land-based data on the condition of our natural assets. Various attempts have been made; for example, the James Hutton Institute, as it is now, has attempted various things to measure habitats, and we have done the same in NatureScot. However, we need the sort of analysis that is down at the level of individual fields and habitats that potentially only the farmer is aware of.

There are various satellite-based technologies that the Government could use to generate data to put into the hands of farmers and give them a better understanding of where their performance sits, but farmers themselves will be able to do the same through what we are hoping to build, which is a biodiversity audit approach or tool. That will put the data in their hands in the form of an app and allow them to record what they are doing and how effective it has been. It will certainly help to fill the gap and provide some of the data that we are missing.

Jenni Minto: Thank you. That was really helpful. I have to say, though, that farmers are being asked to fill in lots of different reports, whether they be for carbon audits, land use or whatever, and now there is this. Is there any way of pulling the different systems together?

Ross Lilley: Yes. I have certainly been encouraged by the way in which other UK countries are tackling this issue. Wales and Northern Ireland, in particular, have been developing and exploring the use of light detection and ranging—LIDAR—technology to get accurate digital data on the condition of habitats and vegetation. That has been largely from a climate perspective, because that helps us understand the emissions balance and sequestration in those countries.

I understand that there is interest in having the same thing in Scotland. It would certainly provide the base-layer data that everybody could draw from for their carbon or biodiversity audits—it is the same type of data that is used.

Jenni Minto: Thank you.

Jim Fairlie: I have a brief question for Ross Lilley. You said that the Government does not have the level of data that it needs. As a farmer, I used to have a crop plan every year and I knew what was going into every single field and what I

was going to do in that field, based on the soil analysis that I had done and what I was looking to achieve. Is there not a way that you or the data gatherers could speak to the farming community? A vast amount of that field-level detail is already available—we just have to tap into it and speak to the farmers to get it.

10:45

Ross Lilley: Yes, absolutely—I totally agree. What has perhaps been lacking is the tools to make it easy for the farmer to share that data and for Government to collate it in a way that allows us to understand what is going on. The development of modern technology and app-based data handling tools, which many farmers are engaging with—particularly in the dairy industry—to record what they are doing with crops and yields and so on, make that easier than it has ever been before. Behind that, the Government has LPIS—the land parcel information system—that farmers use to declare their data through their single application forms every year. That is a huge resource that we can build on. There is a lot of data in that that is already accessible to the farmer and to us in Government and which we can use as a baseline.

The Convener: Following on from that, I note that you have talked about apps and collecting data. We were due to take evidence from Dieter Helm, who is regarded as a leading expert in natural capital and biodiversity, but, unfortunately, he has not been able to join us today. We have heard about farmers being asked to soil test, and we have heard about farmers having carbon audits, but, last night in Parliament, we heard from representatives from Farming for 1.5°C that one of the biggest problems is that there is no destination. Farmers do not know why they are doing these things and what the ultimate outcomes are to be.

Are we a bit like that with biodiversity, too? We used to have FWAGs—farming and wildlife action groups. Officers would come out and help farmers put together plans for restoring waterways, building dykes and improving habitats; they worked with farmers to see what improvements had been made. We have lost that over the past 15 to 20 years. Do we need more people from NatureScot on the ground working with farmers not only to look at what they need to do but to record the positive outcomes? That is what appears to be lacking.

Moreover, what are the timescales for this? We are in a crisis. There is lots of talk about how slow everything is and the fact that things have been delayed. When can we get the app, and when can we get to the point where farmers are realising the benefits of the actions that they are taking?

Ross Lilley: We support about 19,000 regular claimants—farmers and crofters. That is quite a big population to engage with one to one. AECS supports about 3,000 farmers in their contracts, through which they receive some support and advice from SRUC and others. We need to get to a point where every farmer and crofter has a learned individual to go to. From the work that we have been doing in NatureScot on the farming and nature programme that we have been developing, we know that a lot of farmers and crofters take advice and guidance from their peers first and foremost, particularly within the family and among their neighbours, before they go to their formal adviser, which quite often will be the industry, with Government bodies such as NatureScot sitting at the bottom of the pile.

However, to get the wholesale shift in land use that we are seeking for the climate and biodiversity agendas, we need every farmer and crofter to be able to get support and help in terms of advice and guidance in an affordable way. That must be done through a combination of peer-to-peer support, scaling up the advisory industry out there—and, indeed, enabling it to scale up its support—and support from us as NatureScot and from the agriculture officers in RPID, who have a lot of the expertise. SEPA, too, is in the same game. We need a common understanding of the key drivers, but that will not happen overnight, as it will take a number of years to reach those 19,000 claimants.

That said, with tools such as the biodiversity app that we are trying to develop, people can start to have a go themselves in the simplest way possible. Over time, we can build in the advice and support that they need, given that everybody is starting from different points. Some farmers are happy to do this themselves and have the wherewithal while others will need more support.

Rachael Hamilton: The James Hutton Institute did some work on the increase in biodiversity that came about from certain actions. For example, it found that, where there was woodland and scrub, there was an increased number of biodiversity species but there was also a loss of meadow pipit and merlin. How do you prioritise one species over another in the actions proposed by the Government? Have you done any modelling on loss and gain?

Professor Thompson: It is a real challenge, but we are fortunate that both the James Hutton Institute and the SRUC have excellent data in this area.

For a start, it is really important to set priorities at the regional level. With regard to the example that you have just given, we have some internationally important heathlands in north-east Scotland; if we have forestry and woodland regeneration there, we will lose some

internationally important habitats. In some areas of the west Highlands, though, there is a dearth of species-rich woodland, and, although woodland regeneration there will come at the expense of wet heaths that might be fortunate to have meadow pipit in some areas but not much else, moving the landscape in that direction will actually be a very good thing. As a result, in the newly published draft Scottish biodiversity strategy, we have been reflecting on regional variation and the importance of biodiversity in different areas, while also thinking about the different levers that we need to pull in order to maximise the biodiversity benefits.

I also want to comment on the issue that we have just been discussing of clusters of farmers or crofters working together. Having one person or adviser interacting with a group of crofters or farmers to provide advice on biodiversity audits, on how biodiversity is changing and on how practices can be tweaked can make a massive difference for biodiversity. I am thinking, for example, of the farmland bird lifeline that has been operating for corn buntings in north-east Scotland. We had reached a point at which there had been an 83 per cent decline in corn buntings, but, through the concerted efforts of 53 farmers to put in place some very simple farmland measures, we have managed to halt the loss of corn buntings to the extent that, where we have active management and co-operation, there is now a 5 per cent per annum increase in their numbers. Those kinds of targeted measures and co-operation, whether between crofters in the west or farmers in parts of the east, make a world of difference.

The Convener: We will now move on to more detailed scrutiny of the forthcoming agriculture bill.

Jenni Minto: I would be interested in hearing about NatureScot's inputs to the development of the tiered route map, specifically those that might impact on the west coast of Scotland, where my constituency is. Have you been involved in discussions on less favoured area support scheme payments?

Secondly—and this is at a slight tangent—I would also like to ask about the geese payments that NatureScot manages.

Ross Lilley: So far, we have been engaged in what is termed as a tier 2 element—and, to some extent, a tier 3 element—of the four-tier approach. We have an interest in all four tiers, and we have been advising that, for farmers and crofters to deliver right across the biodiversity and climate agenda, all four tiers need to play their part in providing support. I think that, starting with the base tier, the regulatory baseline that is set, with good agricultural and environmental conditions and other cross-compliance measures being taken into account, must reflect the baseline that farmers need to be at, not only from the point of view of good farming and good agricultural conditions but from the point of view of good environmental conditions, too. Such an approach through the baseline will ensure that—and this comes back to a point made by the convener—we stop any further damage to important habitats.

It is in tier 2—enhanced conditionality—that we have had most input in recent years, and it is about developing the broad and shallow measures that can be supported by the proposal for the 50 per cent of the basic payment to be based on conditionality. We have designed those climate and environment measures.

Tier 3—the elective tier—is where AECS has been sat, and we are now thinking about which measures the scheme has been targeting could fit into it. Finally, tier 4 is, as we understand it, where the advice, the knowledge transfer and those aspects of helping farmers to build up their professional capacity to transition sit, and that will be important. That is how all four tiers work, and we are involved in the farm advisory service steering group in making sure that what it is currently doing with tier 4 is supporting it.

As for LFASS, which you asked about, an issue that cuts across the four tiers is how the payments are distributed. We have not had a lot of involvement with that, but we are interested in supporting the thinking around how much funding is required in each tier to make sure that it plays its part. Up to now, LFASS has been a way of supplementing the incomes of disadvantaged farmers who work in environmentally disadvantaged areas, but the logic of that approach can be turned around by pointing out that those farmers are also sitting on some of our most carbon-rich stores in peatlands and woodlands and therefore have the greatest potential to deliver on carbon sequestration and the biodiversity elements that such habitats support. One might well argue that that could be the justification for those areas receiving the additional support that LFASS has traditionally provided.

Jenni Minto: That is an interesting way of looking at it: they are not less favourable areas, but areas that can create great biodiversity and that can be used for carbon sequestration. The other important thing that I should mention is the sustainability of the rural population, which must be built into the thinking on all of this.

If the convener does not stop me from doing so, I want to ask specifically about the geese payments and where you see them fitting into the tiers, if at all.

Ross Lilley: There is no doubt that farmers are facing the additional burden of supporting

protected and globally important geese populations, particularly those on Islay, and that they need dedicated support for that. There is certainly a habitat element to what they are doing through, for instance, grassland management. Livestock farmers dealing with geese are going to have to adopt resilient and regenerative grazing systems, with grasslands that are more robust and permanent, that have more legume content and that, as a result, could be less attractive to geese. Coupled with setting more land aside for nature and wildlife where geese roost and where their natural habitat is, that might take the pressure off in some of those more conflicted situations between geese and grasslands. I would also mention the scaring support and additional licensing support that NatureScot provides. All of those aspects need to work together, and we can try to build that kind of approach through agricultural reform and the evolution of the schemes that NatureScot has been running up to now.

Jenni Minto: I have one very quick question. We have been focusing on trying to maintain different bird species across Scotland, but do you have any thoughts on plants? There are, for example, rare orchids in my constituency. What about the impacts that agricultural reform will have on them and on insects such as the marsh fritillary?

11:00

Ross Lilley: The reason why we still have good marsh fritillary populations in Argyll as well as Irish lady's tresses on Colonsay and Islay is largely the low-intensity cattle-based farming systems that we have. Therefore, in the drive to make livestock more efficient for emissions, we must ensure that livestock support still supports farmers who use low-intensity cattle management, because they are generally good habitat managers. The diverse habitats on the edges of woodlands and wetlands in Argyll and the west Highlands are good examples of that.

Jim Fairlie: I want to pursue that a little bit further, Ross. As someone who used to graze hill cattle, I am absolutely in favour of ensuring that we have coos on the hill. I used to get LFASS support, and I just want to put it on record that I would much rather have seen much bigger payments. If LFASS support is to be increased to encourage low-intensity cattle farming, is any consideration also being given to maintaining critical mass so that we have the numbers of calves needed to keep the industry working? I keep on asking that question, but it keeps getting skipped over. One cannot survive without the other.

Ross Lilley: One opportunity to ensure that we have the critical mass to keep the infrastructure for cattle grazing in the hills alive is for farmers to co-operate. We need to build in co-operation not just for using specific biodiversity measures, such as those that Des Thompson mentioned with regard to corn bunting, but to make a group of farmers work together so that the outcomes that they are trying to achieve—in this circumstance, using cattle—all come together and they are allowed to apply the scheme and support in a way that works for all of them, not just for individuals. However, it is for them to lead that process.

We need to ensure that the system of support across the four tiers gives them maximum opportunity to do that. That is a starting point. After that, it is obviously about the funding levels within the individual schemes.

The Convener: You touched on cattle. NatureScot recently came under a lot of criticism for removing cattle from a farm in Galloway, and it would be interesting to find out what the biodiversity count is now on that hill on the Cairnsmore of Fleet.

My question concerns the tier system and baselining. We want improvements in biodiversity. Farmers should, in some way, be rewarded for such improvements. How do we baseline where we start from? Some farmers will have planted hedgerows and sacrificed some productive land to improve biodiversity. Other farms will be biodiversity deserts. Should we give more money to the latter farms to reverse the deserts and allow the farmers who have done the right thing for 20, 30 or 40 years just to continue? That might have an implication for capping. A big, productive farm might get high payments because of its output, but it might require a big level of input to reverse or address biodiversity loss.

How do you view capping? How do we baseline farms that have done the right thing for generations and those that have been less kind to biodiversity?

Ross Lilley: The farms that are likely to have done less on biodiversity are the ones that are in the most productive agricultural areas, where they can afford to maximise their food production. As a result, the biodiversity that there was might have suffered.

I would argue that, in relation to mainstream farm support and the main measures, if farmers adopt more regenerative agricultural systems in the areas concerned, that alone could do so much for biodiversity, before they are paid to set aside ground—although there is obviously a need for both. In some of those areas, the heavy lifting can be done through regenerative agricultural support,

rather than necessarily having direct biodiversity support.

For farmers who have already delivered and are already managing high-nature-value habitats, we want to maintain and sustain that. Those farmers should be recognised and rewarded for the value that they put in, and they would perhaps get that reward from the more direct pilot schemes.

The Convener: We have heard from many environmental non-governmental organisations that the proposed tiers are the wrong way round and that we should not have 50 per cent of payments guaranteed and ring fenced, with conditionality, in tier 1. Do you subscribe to the argument that we should have more funding in tiers 3 and 4?

Ross Lilley: It all comes down to how much conditionality we can build into all four tiers. If there are clear, readily achievable conditions within tiers 1 and 2 that will deliver broad—[*Inaudible*.]—management, there does not need to be a huge amount of distribution. If we cannot get that into tiers 1 and 2, however, we need to ensure that tiers 3 and 4 are adequately funded in order to deliver the targets.

Karen Adam (Banffshire and Buchan Coast) (SNP): I thank both witnesses for their fascinating evidence. I am particularly interested in what is happening in the north-east, where my constituency is. In Banffshire and Buchan Coast, we have seen the real effects of climate change, as we have been at the forefront of a lot of storm damage, flooding and coastal erosion, and that has been compounded by the bird flu epidemic. There have been massive losses in the numbers of our coastal birds, particularly at Troup Head. The devastation could linger on for decades to come because of what has happened. At the same time, the perception is that we are overrun with gulls, because they make themselves a bit of a nuisance with the locals.

We are trying to build knowledge about the changing environment in the north-east, given the impacts on our climate, our wildlife and our biodiversity. As you suggested earlier, farmers see those changes, and they know and understand what is going on. They are keen to help as rapidly as they can by, for example, encouraging more clover growth. They are concerned about the lack of butterflies—they are saying that there have not been as many butterflies as they would normally see. There has been a rapid change in the landscape, but there is perhaps not so much public awareness of what is going on.

In the light of COP15—the 15th conference of the parties to the United Nations Convention on Biological Diversity—and given the Scottish Government's biodiversity strategy, what good is coming out of what is going on? What does it mean for the future agriculture policy? How can we energise and educate people to get on board with what is happening?

Professor Thompson: What a great way of putting it.

The problem is that, although people recognise that we have a climate emergency, for the very reasons that you have described, I do not think that people get the point that we have a nature emergency, too. There is a growing realisation of it, but we have a very long way to go.

I go back to what you described in relation to gulls. What has happened with gulls is a catastrophe, but it is because of what has happened at sea. The food base for gulls has declined for a great many reasons, so gulls are having to move inland. They are moving into towns and cities, where they are not adapted to breeding, to the extent that herring gulls and lesser black-backed gulls are now very good at tracking schoolchildren on a daily basis, knowing where there will be ready food for them. We are very fortunate that good guidance is available from NatureScot and local authorities on how we should manage and control gull populations.

The broader realisation that climate change contributes to the nature crisis and, therefore, to the problems that we have on our doorstep is a parable for what is happening more widely. Farmers get it, probably more so than people in any other land use enterprise in Scotland, because they witness and understand the changes that are taking place—if only we could get across in schools and wider communities that wider realisation as to what is causing this conjoined nature and climate crisis and the measures that we need to put in place to tackle it.

Gulls are such a good example—do not blame gulls, because what is happening with gulls is a symptom of the decades of change that have resulted in massive redistributions in nature.

The Convener: We have touched on whole-farm plans, and we know that NatureScot is involved in developing a natural capital assessment template. There were high hopes that that would be delivered and that it would give us an indication on baselines, which goes back to my previous question. How is the assessment template progressing? Are you still as confident that it will be a useful tool for whole-farm planning?

Ross Lilley: We are trying to simplify the natural capital approach, which is an internationally recognised theory about how to assess multiple public outcomes and how to use that to inform decision making. We have adapted that process to the farming context in Scotland and have tested it out with about 40 farmers and

crofters, mostly to find out whether they can grasp the concept and use it effectively in their farms.

For those who are not familiar with the natural capital process, it considers not only biodiversity but production on the farm, the labour force and soil conditions. It is about finding a way of putting those issues side by side and considering the trade-offs for a particular farm in a particular location in relation to how the farmer can maximise the farm's natural capital. It is about more than biodiversity; it also embraces carbon audits, for example. We have got to the stage at which it could, in effect, be a form of whole-farm planning.

However, that process depends on, as we discussed earlier, getting good data about conditions down to the field level, which is lacking in some places. The level of publicly available, free-to-use data is good on some farms and not so good on others. To take the process to the next stage, as a starting point, we would need to develop that database, so that farmers find what they have and what condition it is in easier to understand through the natural capital approach. We also need to discuss with Scottish Government colleagues whether that could form the basis of, or inform, a whole-farm planning approach for tier 1.

Jenni Minto: Do you have any preliminary findings from the pilots on outcome-based approaches? Are they helping to influence the payment model? What connections do you have with other projects that are going on, such as Quality Meat Scotland's monitor farm programme and the work that the Nature Friendly Farming Network is doing on peer-to-peer support and on how things could and should change?

Ross Lilley: Over the past three years, we have tested an outcome-based approach with between 80 and 100 farmers and crofters, largely on a theoretical basis. We asked them how being supported on an outcomes basis—as opposed to a prescriptive basis, which is how farm support has been provided up to now—would work for them and what their understanding is of the outcomes for their circumstances. The response was that farmers overwhelmingly respond far better to that approach than to having a prescriptive, top-down—[*Inaudible.*]—measure this way, otherwise we will not pay you or we get penalised. We have learned that fundamental lesson from that work.

11:15

Then, of course, the question is, what is an outcome? We have managed to come up with a series of outcomes that are quite similar according to the farm type and type of habitat that we are talking about. We have used a scorecard approach, which has been tested and used in southern Ireland and elsewhere in Europe. We set out the outcome and how you would get there using a number of simple-to-use parameters that a farmer could understand, see in the field themselves and score. That is largely what we have been testing.

That scorecard approach, on a 1 to 10 scale, is probably the biggest element that we have learned. In effect, a farmer and their adviser—the Scottish Government official running the scheme—could use it as a base. They could take a hedgerow or a species-rich grassland, for instance, and use the scorecard to score where they were at. If they were a number 4 on a scale of 10, they could progress up to 5 or 6 by adopting a number of measures to improve the score in their context. The farmer would draw down their payment to do that. The measure for somebody in Argyll, in the west of Scotland, would be different from the measure for somebody in Aberdeen, but the outcome would be the same.

That is how the outcome approach can work better in relation to how payments are constructed and work. The payment would be the same whether you were in Aberdeen or Argyll, but the way that the outcome would be achieved would be different. An example of that relates to dates. In the AEC scheme, we have measures whereby farmers are expected to shut off their fields in springtime to allow waders to breed and nest. There is a standard, set date in the scheme for that, but, of course, the date changes according to where you are in Scotland. The prescriptive, audited way that we deliver the scheme means that it is difficult to vary the date. However, if we take an outcome approach, the farmer can decide when they shut off the field, according to the waders' behaviour in their location, but still receive the payment.

Jenni Minto: Have you been linking into the monitor farms and the work of the Nature Friendly Farming Network?

Ross Lilley: Yes. We have a steering group for that project, which includes the Nature Friendly Farming Network, NFU Scotland and others. We are starting to engage with Quality Meat Scotland's monitor farm system, because the farmer clusters that are being set up are asking for understanding about how, in their location—[*Inaudible*.]—including one on Islay. They are saying that they want to know what they can do for biodiversity in their location. We are looking to share with those monitor farm groups the tools and scorecards that we have been using and testing with our 80 farmers. We will ask them to test them in their situation to see whether they

work for them and what outcomes they achieve in their areas.

Alasdair Allan: I am interested in your response to the CivTech challenges. Challenge 8.2 is:

> "How can technology help drive effective resource management for a multiskilled workforce in a constantly changing environment?"

That seems to relate to the rural payments and inspections division. I ask you to respond to that or to how the CivTech challenges more generally might be applied when developing future agriculture policy.

Ross Lilley: It was a CivTech challenge that kicked us off in developing the outcome-based approach. The POBAS—piloting an outcome-based approach in Scotland—project was partly funded by the CivTech process to come up with an app for doing the scorecard exercise that I just explained. We worked with a new start-up technology company based in Edinburgh to develop the application process. That company is now looking to get support for its product in not just the public sector but the private sector—supermarkets and so on. Whether or not we use what it developed to support future payment distribution, it is now looking to sell the tool to farmers, supermarkets and others. For instance, a supermarket could use the app to set a premium on biodiversity delivery. There are a number of examples of things being developed in a similar vein.

The Convener: Before we move on to the next question, I note that we are probably going to run a little over our expected time. Will you be available for a period after half past 11, gentlemen?

Ross Lilley: Yes.

Professor Thompson: Yes.

The Convener: That is helpful. Thank you. We will move on to questions from Rachael Hamilton.

Rachael Hamilton: First, I am going to ask you a broad question. What is the difference between a catchment management approach and a landscape-scale approach?

Ross Lilley: Those are two different ways of explaining what a landscape might be. There are different ways of arguing what we mean by "landscape". We can articulate that through bio-geographical terms. For example, a landscape could mean a glen with a river in the middle, which is the catchment leading down to the shoreline, or it could mean a cluster of farms on a particular soil or land type that all have a very similar type of farming activity. A landscape could mean a group of hills, and so on. In many ways, the terms define landscapes in organic terms.

In general, our understanding is that the most effective landscape-scale partnerships are generated organically by the fact that a logical number of individuals come together before things become unwieldy. That tends to form an area of land of between 10,000 and 50,000 hectares, which makes sense as they are likely to have similar geographical characteristics.

Rachael Hamilton: That is really helpful. Thank you. I take the opportunity to say that this has been a really useful session.

I understand that the approaches are very similar. They bring together urban and rural, industry and tourism; they prioritise goals for water quality and wildlife; and they basically look at the land use strategy. Bearing in mind what has been said about the regional approach, what work have you been doing that could help to create a future agricultural payments scheme? How do you envisage all the stakeholders who are trying to reach the same goal being part of that payments scheme?

Professor Thompson: One difference between the catchment management and landscape-scale approaches is that, when we use catchment management, we go from summit to sea, which means from the highest areas—I am thinking about mountainous areas—down to the sea, and, at each step of that, we put in place measures that benefit biodiversity. In areas that are high up, a measure might be peatland restoration through our peatland action project. There is also the creation of riparian woodland along river margins, which helps to mitigate the effects of climate change and benefits salmon and other fish species. We then work our way down to the sea, where the measures are for flood risk reduction.

If we work at catchment level and we can incentivise land users and communities to come together, we will get a disproportionately greater benefit for biodiversity than we would get if we adopted a piecemeal approach. For instance, riparian woodland is massively important as it enriches water quality and benefits biodiversity around the area in which it is put in place. However, unless we have sufficient deer management, we will have to put expensive fencing in place, which is not sustainable. It is about adopting a holistic approach and ensuring that the resources cover all the land uses and the management that we put in place from summit to sea—or, as Scottish Water refers to it, from source to tap.

Ross Lilley: Rachael Hamilton may be referring to regional land use partnerships and that approach to prioritising land use.

There is no doubt that agricultural support, important as it is, particularly in the farming sector, is only one part of the metrics or the support that will be needed to bring about land use change for climate and biodiversity. We are talking about £20 billion, potentially, being required in 10 years or so to get nature to where we need it to be in the next 10 or 20 years. That is not going to come from the public sector or from the agriculture budget, which is currently about £500 million a year in Scotland, under the CAP regime. We are going to have to lever private investment into land use, and farmers can be part of that.

I am talking not just about land purchase for nature or carbon codes but about some quite big private investment—capital investment—in land use change. For instance, there are flood management models whereby the private sector could invest in flood management across fields upstream in order to prevent flood damage downstream. That does not need to come from the public sector; it can come through natural capital markets in a tradable format that brings a good income and support to the farmer, in addition to the capital measures that are required to do it.

We need to ensure that the public support that the farmer gets through farm support schemes dovetails with that, helping those measures to happen rather than going against them. At the moment, farmers are naturally holding off from engaging in that private market investment at landscape scale because they do not know how they are going to be supported through farm support.

Rachael Hamilton: That is exactly the answer that I envisaged you would give. I love the description of the agricultural payments dovetailing with all the other things that are happening.

I will use my constituency as an example. The Hawick flood risk management scheme was funded only to a certain point. Residents who live beyond that point still get their houses flooded, and the scheme is not bringing the whole community within the project. If it had extended from the Teviot to the summit, things would be different, but it was confined by resource, unfortunately. I think that that is exactly what you have just described. A whole load of things need to be involved, such as the national planning framework 4, planning applications, investment in flood risk management and the agricultural payments system.

Ross Lilley: The natural capital tool that we mentioned earlier involves a farmer using the natural capital process for their own farm management interests. NatureScot is building a tool that works at landscape scale. It is a tool, so we are not dictating what should happen at a landscape scale; we are providing a means to develop a partnership of multiple land users, farmers being a major part of that. Scottish Water, SEPA, local authorities, different landowners, foresters and others would use the tool collectively to work out their priorities at a regional scale.

The Convener: We sort of have that already with the biosphere in Galloway and southern Ayrshire, which covers around 5,500 km^2, but it has no powers, although it got £1.7 million of funding. That model might be an exemplar for a landscape or catchment area type of management. As Rachael Hamilton said, there is a missing link between the commercial side, agriculture and whatever. However, we have a model there, to an extent, for delivering some policies.

Jim Fairlie has a supplementary question.

Jim Fairlie: I return to what Ross Lilley said about dovetailing. Like Rachael Hamilton, I like that analogy. As we heard from Martin Kennedy last week, we must remember that the bill that we are scrutinising and talking about today is an agriculture bill. It is there to support agriculture to produce food and to create resilience in the food system. Does it seem to you that we are trying to do too much with one bill and with a limited pot of money?

11:30

Ross Lilley: At the moment, the CAP payments are split largely into pillar 1, which is food production and farm income support, and pillar 2, which is where a lot of the wider public goods that we are talking about have been delivered so far, and funding has been split appropriately.

The intention should be that the agriculture budget will continue to support the broader public goods and services that we get from farmers and to pay them for what they produce. We should not lose that. The critical question is to what extent the way that farmers produce food can also deliver wider public benefits.

There are good examples out there among farmers who are operating today, and the science and the evidence show, first, that farmers can produce food for that part of their support in a way that will continue to be resilient and sustainable given the climate shocks that are coming right now, and secondly that they can actually deliver way more in the way of biodiversity and wider public interest than they have been able to deliver up to now because of the way that they have been supported.

Jim Fairlie: The farming community absolutely accepts that it has a massive role to play in this—nobody denies that. However, it seems to me that, given the scale of the challenges that we face, the

things that the farming community will do within the confines of the funding that will be available to them will not be nearly enough. You talked about private equity coming into the landscape-style approach and the gains that we have to make. Is there a need to shift some of the focus away from the funding for agriculture and look at how we will do it on a much bigger scale?

Ross Lilley: Yes, absolutely, if we are to meet the nature targets. Reaching the climate targets will require more than the public money that is currently available or is likely to be available. The question is, who in the private sector wants to pay for this? Are supermarkets prepared to put a premium on food that is produced more sustainably and environmentally sensibly? Is the customer prepared to pay that premium? Will the private sector want to pay for natural capital goods that are currently in the carbon markets?

Lots of work is being done to understand the additional benefits of having carbon targets and nature targets, and that investment is sitting there. The banks are starting to get interested in investing directly in regenerative agriculture, because they want to make sure that their investments in farming are more sustainable and resilient, and they can do that by supporting that type of farming.

Jim Fairlie: You mentioned whether supermarkets should put a premium on that type of food. We have been down that road before. Generally, these things are brought in as incentives, but they become sticks to beat people with at a later date. Given that we are in a cost of living crisis, people will not be able to afford to pay that premium, so that funding will have to come from different sources, will it not?

Ross Lilley: If we consider the carbon in some of the key habitats that we need for biodiversity and our climate—such as woodland, peatland restoration, hedgerows and organic soils—and the nature benefits on top of that given the way that those habitats are managed, there is a value there that the financial sector is prepared to invest in.

Jim Fairlie: However, that leads to Scotland being in danger of losing the value of its natural capital to big organisations that do not live here. That might be a bigger question than the ones that you are here to talk about today, but the process is going through my mind as we speak.

Ross Lilley: The farmer can receive an income from that in a way that they have not been able to up to now.

Jim Fairlie: Okay. Thank you.

Beatrice Wishart (Shetland Islands) (LD): I echo what other members have said about this being an interesting and informative session. We spoke earlier about knowledge gaps, and Ross Lilley mentioned digital data. When looking at improving biodiversity on farmland, what are your key research and development areas? How do you envisage the evidence that is generated through research will feed into the Scottish Government's agriculture policy?

Ross Lilley: I will kick off, and then we can hear from Des Thompson.

We are saying that there are five actions that all farmers can take for nature. Number 1 is ensuring that they plan and integrate what they do in a whole-farm approach. That is the approach that we discussed.

Number 2 relates to soil. If there is one take-home message for what we want to do to support farming, it is that we need to improve our soil health, because that generates so many outcomes across the public agenda, not just resilient food production but outcomes for the climate agenda in terms of reducing emissions from soils and sequestering carbon and then for biodiversity. We have not mentioned so far that half our biodiversity is below the soil surface rather than above it.

Number 3 is enhancing the habitat network. That involves creating a space for nature by providing field margins, hedgerows, pieces of woodland, species-rich grasslands and unimproved grasslands and linking them up across the farm.

Number 4 is creating new habitats so that we get the scale that we need, and number 5 is specific species targets—the sort of actions that Des Thompson has mentioned that we can take.

Those are all easy to implement and measure. We need to ensure that we get enough of it happening at scale and that we are able to know when it is happening. That is where the data comes in. We have a truly national database that allows us to be updated regularly enough to know that all those five elements are happening.

Professor Thompson: I absolutely agree with Ross Lilley about soils. We are learning so much about them. Brilliant work is going on at the James Hutton Institute. We are finding species new to science in the equivalent of a teaspoonful of soil—particularly in some of our mountain and woodland soils. The composition of fungi, in particular, within the soils is important for influencing carbon sequestration. If only we could communicate more to farmers and other land users about the importance of soils and soil condition, it would make a world of difference. People are fascinated by soils and understand their importance not just for sustaining biodiversity and food but for sequestering carbon.

The Convener: Jenni Minto has a supplementary.

Jenni Minto: I do not have a supplementary, but I was agreeing, because I remember being at a meeting where a farmer spoke passionately about that. He is based on Lismore and, in the 1970s, he had been thinking about how to increase crops, specifically strawberries. He said that, from the smell when he put the chemicals on the field, he should have realised that he was killing things.

I was just nodding in agreement, convener. I am not entirely sure why you have come to me. I apologise for going off on a tangent.

The Convener: I am mixing up my J Ms and J Fs. My apologies.

When it comes to soil, there is one area of contention at the moment. It has an implication for NatureScot. Improving soil is important, and one of the ways in which we can do that is by decreasing the input of nitrogen fertilisers and reducing the use of pesticides. However, to maintain our output, we have to improve how crops fix nitrogen or are able to uptake and use more effectively the nutrients that are in the soil, because, if we do not, there will be a drop-off in yield. What is your view on the use of the genetic modification of potatoes, cereals or grass to ensure that the crop can uptake the available nutrients in the soil far more effectively than currently? Should that be in the mix?

Ross Lilley: There is a different question about the unknown consequences of genetically modified crops on nature, which would concern us. If we are going to introduce genetically modified crops, do we have enough science and evidence about the likely unforeseen impacts on nature?

Separately, but not to sidestep your question, whatever crop we are putting in the soil, if it requires a lot of extractive, additional and inorganic inputs and treating the soil as a substrate, that is not the direction that we need to go in if we are going to have resilient soils for food production and for climate and nature.

We need crops that are able to make the most of the ability of the organic matter in the soil to provide nutrient contents. Whether they are genetically modified or otherwise, that is the fundamental question.

The Convener: The likes of the James Hutton Institute would suggest that there are huge advances in technology that we could apply to crops to reduce their impact on the natural environment.

Ross Lilley: Let us diversify cropping systems, because the more diverse crops are, the more likely the soil will improve. Let us bring legumes into the system. Livestock will have to be part of it if we are using agroecological regenerative systems as part of cropping, because they produce a lot of organic matter. At the bottom of the tree is the use of inorganic inputs. They will have to continue to be there in order to maintain productivity, at least while we transition to our agroecological system, but we need to minimise them. There is good technology to target them better so that they have the least impact on wider nature.

Jim Fairlie: I have a wee supplementary question in this section.

You talked about research on soil, and I will find more out about the stuff that you have been looking at. I echo my colleagues in saying that this has been a fascinating evidence session.

Farmers will take up whatever we ask them to, if they believe and trust in it, but we hear a lot from the farming community that different science with different requirements is being thrown at them. How do we get a set of scientific data that farmers can put their trust in and buy into so that we achieve these outcomes?

Ross Lilley: There are a number of carbon auditing tools around and, in Scotland, as I understand it, the majority of farmers are using the Agrecalc tool that was developed by the SRUC.

This is for the industry to lead on. Ultimately, the use of such tools has helped the industry to understand and improve its performance, and the tools can support individual farmers. By sharing the results that farmers get from those tools, the metrics that the tools use can be rationalised. It is equivalent to how technology has developed in other spheres such as video technology—ultimately, a single commonly used metric will emerge. We cannot easily build a metric that everyone in the system uses. It needs to come from the bottom up and through sharing the data and understanding where the variables are.

Professor Thompson: Developing a series of biodiversity metrics that everyone signs up to and therefore more people have confidence in is an important challenge. The Scottish Government has committed to having a centre for biodiversity expertise, and there is some early planning around that. That will be a very important focal point for providing the evidence base on the drivers of biodiversity change and what we need to do to get the best outcomes. People would have a lot of confidence in that. We are fortunate, in Scotland, that many of our research centres work together.

We have terrific collaboration across Scotland between centres such as the SRUC, the James Hutton Institute, the University of the Highlands and Islands and some of the mainstream university departments, and we need to build on

that. We also have great expertise in Scottish Government itself—within the rural and environment science and analytical services division, for instance.

The Convener: Rachael Hamilton has a brief supplementary question.

11:45

Rachael Hamilton: You talked about streamlining the process that we use to look at agriculture outputs. Last night in Parliament, the committee met representatives from Farming for 1.5°C, and I asked the question of which measure of global warming potential we should use to calculate methane emissions—GWP100 or GWP*—and there was an overwhelming consensus that we use one calculation rather than both, because that is skewing the data. What is your opinion on that?

Ross Lilley: There is an issue that the way in which the Intergovernmental Panel on Climate Change measures emissions and sets emissions targets tends to confuse the ask from individual farmers. For instance, it deals with net emissions rather than total emissions from land. I suppose that the difference between the two metrics for methane is an example of that.

I do not know what else to say on that other than that we must not let that confusion prevent people from starting to take action. Over time, as the science gets better and we understand how those targets are measured, it will become apparent that one is better than the other. However, at the moment, we just need to get farmers to look at ways to reduce methane emissions from animals and not worry too much about which target they are hitting.

Any effort that farmers are making to reduce emissions that is not recognised by the IPCC targets should be recognised in the way in which the effort is supported, if you know what I mean. The effort that they put in should be supported by the agriculture support system rather than by being measured against IPCC targets.

The Convener: Thank you very much. It has been a fantastic evidence session. Given that Ross is a former Aberdeen agri colleague of mine, I would expect nothing less. Thank you very much, Des Thompson and Ross Lilley, for a great session and for giving us extra time for our questions.

That concludes the public part of our meeting, and we now move into private session.

11:48

Meeting continued in private until 12:12.

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