OFFICIAL REPORT
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Rural Affairs, Islands and Natural Environment Committee

Wednesday 1 December 2021

Session 6

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Pàrlamaid na h-Alba

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RURAL AFFAIRS, ISLANDS AND NATURAL ENVIRONMENT COMMITTEE
13th Meeting 2021, 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)
*Dr 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:

Terry A'Hearn (Scottish Environment Protection Agency)
Grant Moir (Cairngorms National Park Authority)
Graham Neville (NatureScot)
Dr Fiona Read (Scottish Entanglement Alliance)
Dr Alistair Rennie (NatureScot)
Danny Renton (Seawilding)
Rachel Shucksmith (University of the Highlands and Islands)
Dr David Signorini (Scottish Forestry)
Andy Wells (Crown Estate Scotland)

CLERK TO THE COMMITTEE

Emma Johnston

LOCATION

The Mary Fairfax Somerville Room (CR2)

Scottish Parliament

Rural Affairs, Islands and Natural Environment Committee

Wednesday 1 December 2021

[The Convener opened the meeting at 09:00]

Climate and Nature Emergencies

The Convener (Finlay Carson): Good morning, everyone, and welcome to the Rural Affairs, Islands and Natural Environment Committee's 13th meeting in session 6. Before we begin, I remind members who are using electronic devices to switch them to silent mode.

Item 1 is an evidence session looking at the impact of the climate and nature emergencies on areas in the committee's remit. Today, we will focus on two areas. The first is innovation and new approaches to environmental challenges in the marine environment. I welcome our first panel: Dr Alistair Rennie, who is project manager with Dynamic Coast; Rachel Shucksmith, who is marine spatial planning manager at the University of the Highlands and Islands Shetland; Dr Fiona Read, who is from the Scottish Entanglement Alliance; and Danny Renton, who is chief executive officer of Seawilding.

We had to cancel this session last week because of technical problems, so I very much appreciate the witnesses making themselves available again. I invite Dr Rennie to make a brief opening statement setting out the background to his innovation project, followed by Rachel Shucksmith, Dr Read and Danny Renton.

Dr Alistair Rennie (NatureScot): Good morning. Can you hear me okay?

The Convener: Yes.

Dr Rennie: Great. Thank you for the opportunity to provide evidence to the committee. Over the past few weeks, the world's eyes have been on Glasgow, and, for the next hour or so, our minds will turn to Scotland's coast and marine environment. I hope the committee will appreciate the strong links between global efforts at the 26th UN climate change conference of the parties—COP26—and the work that the public sector, and some private partners, are now doing on Scotland's coast.

COP26 had four high-level goals: mitigation, adaptation, finance and collaboration. Our research underlines the importance of that approach domestically. My role is to improve and explain the evidence base on coastal change. That is aimed at supporting better decision making, which will help Scotland to become sea-level wise and climate resilient. If members have not already done so, please visit DynamicCoast.com.

I hope that the following aspects will be explored through our discussions. Climate change is already affecting Scotland's coast and, under all future climate scenarios, the rate and extent of coastal erosion will increase. Dynamic Coast is part of the Scottish Government's approach to building climate resilience and supporting adaptation.

This is an area in which we can and must appreciate our inheritance. Around £15 billion-worth of coastal assets are currently being protected by nature. As a society, we must incrementally improve on that, year on year, in order to ensure that future generations are better prepared. As the committee knows, the nature and climate emergencies are one and the same, and we need to help nature to help us.

It is a joint effort. The Scottish climate change adaptation programme confirms that coastal erosion is a cross-cutting threat affecting multiple sectors of society, but we can and must act together to become sea level wise. Our shared challenge is to understand how the risks will increasingly affect us, our assets, communities and nature and our natural and artificial coastal defences, and how we can flexibly respond in order to safeguard society.

Dynamic Coast provides the evidence base for coastal change across Scotland. The final model run included 5.5 million calculations at 10m intervals, for every decade to 2100, on high, medium and low-emissions scenarios on our open erodible coasts. We have mapped the change against society's assets to inform the national coastal erosion risk assessment. That sits alongside assessments of coastal erosion-enhanced flooding; detailed super-site analysis showing resilience and adaption options at six locations; vegetation edge analysis; coastal erosion disadvantage, which explores social vulnerability to erosion; and entirely novel coastal monitoring using satellite data.

Although climate change poses a stark challenge, we are improving our ability to monitor, learn, innovate, plan and adapt together. I look forward to the discussions and to the committee's questions.

Rachel Shucksmith (University of the Highlands and Islands): Thank you for the opportunity to give evidence. I am the marine spatial planning manager at the University of the Highlands and Islands Shetland. My role is to co-ordinate Scotland's first regional marine plan

under the Marine (Scotland) Act 2010. As one of the first regions involved, we have an opportunity to develop a number of workstreams and test approaches that can inform marine planning across Scotland. As part of that, we provide communities with an opportunity for increased representation in respect of carbon, which is particularly important as we transition to a low-carbon future. Representational justice for our fishing communities and for recreational users is particularly important in areas such as Shetland, Orkney and the Western Isles, where marine renewables are likely to be particularly important as we seek to decarbonise.

One important aspect of giving communities the opportunity to participate concerns the provision of data. In Shetland, we have tried hard to ensure that decisions are based on the best data available. There is a benefit to communities because they are represented in decision making, and it prevents avoidable impacts on existing uses, such as fisheries. It also provides an opportunity for developers to site developments in the best location to avoid objections later on in the consent process, which helps them to avoid delays and reduce costs.

An important benefit that communities can provide for marine planning, and from a carbon perspective, is ensuring that any blue carbon sinks, such as horse mussel or maerl beds, are correctly identified. Marine users often have quite good knowledge of where those habitats may or may not occur. In Shetland, we have worked closely with our inshore fisheries community to map those habitats, and to ensure that the community leads on the adoption of protective measures so that those habitats are not damaged.

Marine carbon sinks are of greater importance than their on-land equivalents, as they sequestrate greater quantities of carbon. By working with local fishermen, we have identified very large areas of protected habitat that were previously unknown. As the work has been led by, or done in partnership with, the local community, that community is far more receptive to any protective measures that have subsequently been put in place. Across Shetland, we now have a series of 25 areas that are closed to fisheries, which the fishermen led on and which has protected important blue carbon sinks.

As marine planning is rolled out across Scotland, there is an opportunity to embed the community agenda at a local level. That will help Scotland to deliver our national objectives at a more local level, through working with communities to achieve them.

Dr Fiona Read (Scottish Entanglement Alliance): Thank you for the opportunity to provide evidence on marine animal entanglement. The Scottish Entanglement Alliance, which we refer to as the SEA project, was initiated by fishers. Fishers, such as creel fishers, approached Whale and Dolphin Conservation about the issue of entanglement in their gears. During a meeting with Marine Scotland, WDC raised the issue and was advised to apply for funding from the European maritime and fisheries fund. We applied for that funding and the SEA project began.

The project is a collaboration between the creel fishing industry and five organisations: NatureScot, the Hebridean Whale and Dolphin Trust, British Divers Marine Life Rescue, the Scottish Marine Animal Stranding Scheme, and Whale and Dolphin Conservation.

During the project, 159 fishers—that figure represents 11 per cent of Scotland's creel fleet—were interviewed about their experiences of entanglement. Based on those interviews, we found that entanglement occurs all around the Scottish coast. Although the number of reported entanglements is low, we found, in extrapolating from the SMASS and BDMLR results, and from the interviews, that only 5 per cent of entanglements had been reported to the different networks.

More species were reported as being entangled than we had anticipated or knew about, including basking sharks and small cetaceans such as the harbour porpoise. Entanglements are a severe welfare issue. Entangled animals suffer or die over many weeks or months of carrying the heavy gear, which compromises their health by affecting their feeding and diving ability and causes them severe injury from rope abrasions.

For individual fishers, entanglement is a very rare occurrence. For most of those who were interviewed, it had happened once in a lifetime, or they had experienced it around once every 10 years. However, the incidence of entanglement events in Scottish waters may be sufficient to impact some species, such as the minke whale and the humpback whale, at a local population level. There may also be a population-level impact on other species, such as harbour porpoise and common dolphin, with high bycatch rates in different gear.

The co-occurrence of creel effort and minke whale sightings was mapped to identify high-risk areas for entanglement. The areas identified were east of the Outer Hebrides, west of North Uist and throughout the waters around Skye. Photo identification records of minke whales on the west coast of Scotland from a long-term project by the Hebridean Whale and Dolphin Trust were assessed for evidence of entanglement, and it was found that more than 22 per cent of the animals encountered by that aspect of the project had entanglement-related scars.

During the SEA project, we collaborated with the International Whaling Commission on its global whale entanglement response network. We also ran Europe's first disentanglement training workshop for the fishermen, which was very successful. Overall, the project demonstrated positive collaboration between the fishing industry and research and conservations organisations.

Solutions to entanglement are available. We know that certain species are caught in certain areas of the gear. For example, basking sharks and minke whales are caught in the ground line of the creel gear, whereas humpback whales, other cetaceans and turtles are more often caught in the end line of the gear, which is the line that takes the gear up to the surface. To mitigate against entanglement in the end line, one possible solution is using weighted rope. There is also ropeless gear, which is often called the on-call gear.

We look forward to the discussion.

The Convener: Last, but not least, I invite Danny Renton to speak.

Danny Renton (Seawilding): Thank you for inviting us to join the committee. I represent an organisation called Seawilding, which is a community-led charity. We are based up at Craignish in Argyll, and our purpose is to restore biodiversity to the loch. Our loch is about 80km in circumference, which is typical of Scottish sea lochs.

We know from Victorian accounts that the biodiversity has changed. The loch used to be full of fish and natural wonders, but it no longer is. Drivers of change include the likes of aquaculture and all the environmental problems associated with that, and the fact that scallop dredgers are still allowed to come into the loch and dredge right up to the shoreline, destroying the ecosystems.

The charity was formed because we wanted to get together and, rather than just wringing our hands, look at what we could do try to reverse some of that. We started by looking at some of the things that had disappeared from the loch. They included native oysters—we have a relic population of around 200; they used to be in the loch in abundance—and seagrass. Around the United Kingdom's coastline, move than 90 per cent of both those priority marine features have disappeared. They are absolutely critical ecosystem builders, and they are a keystone species for habitat—[*Inaudible*.] Here at Loch Craignish, what we want to do—[*Inaudible*.]—and to research different methodologies for doing that at low cost, so that we can help other communities to do the same.

We got a national lottery grant to put down one million native oysters over five years, and we have put down nearly 300,000 so far. We are also grateful for a grant from NatureScot to plant a quarter of a hectare of seagrass, which we are currently doing. The grant period will end in March next year—[*Interruption*.]

Forgive me—my phone keeps on ringing. I am trying to turn it off.

09:15

The charity's purpose is community orientated. Six schools are involved, and five universities are involved in looking at carbon sequestration and at environmental DNA and biodiversity change over time. The idea is to develop low-cost, best-practice methodologies that we can roll out to other communities on the Scottish coastline.

There is a hunger for such an approach. Many coastal communities have a sense that they have been slightly dispossessed in the fisheries debate. We are not included in the inshore fisheries groups, although we have seen chronic biodiversity loss in all the Scottish sea lochs. Scallop dredging and bottom trawling continue to occur right up to the shoreline, resulting in a collapse in biodiversity and in economic opportunity. We genuinely believe that working together to restore biodiversity will, in the future, provide economic opportunity for many.

The Convener: I thank all the witnesses for their introductions. Members will ask questions until about 10.30, and I will kick off. We have heard about individual area-based projects and about wider research. Does current policy support innovation and the mainstreaming of your research findings? What structural changes to policy are needed to support new and on-going projects that will achieve the outcomes that we need to reverse biodiversity loss? I will go round everybody for answers.

Dr Rennie: The policy structures to support innovation are reasonable. The Dynamic Coast project is a fine example of an idea that started with a PhD project—as it happens, NatureScot supported it—to look into the assets that are behind our erodible shore. From that, and through discussions in NatureScot, with partners across government and in the Government itself, Dynamic Coast was born. That has spurred other innovations in pure research and in broader policy areas and has produced further discussion.

I am comfortable with the achievements that we have made and the policy ecosystem that supports that, but the challenge is growing. We will need to redouble our efforts to be up to the challenge in the future.

Rachel Shucksmith: If we think of achievements such as creating the closed areas for fisheries, that was possible only because the

Scottish Parliament's first act was to give Shetland control out to its 6-mile limit. That has not been replicated for any other community. Innovation that we have achieved in Shetland is not possible for any other community to achieve at the moment.

Policy, legislation and regulations underpin any statutory setting up of management. On challenges such as biosecurity—invasive species invasions—we lack regulation that creates clear laws that marine areas can enforce locally. The Wildlife and Natural Environment (Scotland) Act 2011 is a good piece of legislation that makes it illegal to spread non-native species, but that is not defined in the same way as contamination of the sea bed is, where provisions refer specifically to 5mg of copper or whatever it might be. Legislation does not stipulate that boats must be cleaned X number of times a year, for example.

Some challenges that the marine environment faces are not clearly regulated for, which makes local enforcement difficult. Scotland has a series of good policies, but that is not always underpinned by regulation that is specific enough to allow policies to be implemented.

The Convener: Rachel Shucksmith, you have a successful marine planning area, which might be because it is a relatively compact area. Should there be legislation to ensure that all stakeholders get round the table? We heard that some coastal communities were not involved in the inshore fisheries groups and so on. Should we see more of such involvement? The arguments over scallop dredging, creel static gear and so on are very polarised at the moment. Would it help if policies were put in place so that everybody came together?

Rachel Shucksmith: The Shetland marine planning partnership has the ability to do that via direction from the Scottish Government. Hopefully, the opportunity to bring everyone together will be rolled out across Scotland at some point, but that process has not taken place yet. The Scottish Government also has the IFGs to enable it to do that, but the IFGs do not have plan-making ability. Our marine planning partnership and all the other marine leaders have plan-making ability. The inshore fisheries and conservation authorities in England have plan-making ability, but the IFGs in Scotland do not. Without such statutory underpinning, it is difficult to elicit change in our fisheries practice at a local level, even if it is desired by the local community.

Ariane Burgess (Highlands and Islands) (Green): My question follows on from the convener's initial question about policy. I would like to hear whether panel members feel that there is enough support in the current policy environment to ensure a timely and just transition for coastal sectors and communities, to ensure that they can continue utilising our marine and coastal habitats, as new measures are brought in to reduce the impact on biodiversity. What support is needed to ensure a just transition?

Danny Renton: We are not blaming the fishermen for the destruction of the sea bed; it is a regulatory failure. What fishermen are doing is permitted. We want a just transition and financial support for fishermen, who may be prevented from dredging in the inshore in the future, but the policy is not there at the moment.

Just to give a snapshot of where we are in Loch Craignish, we have priority marine features, native oysters, seagrass and northern sea fans. We have the remnants of a maerl bed, but it has been dredged. Those are all supposed to be protected by law, but none of them is. As I mentioned before, dredgers still come up the loch as close as they can to the shoreline. That is the destruction of the ecosystem. It is the same all the way up the west coast of Scotland and has been since 1984.

Simultaneously, we have seen the collapse of fisheries. White-fish stocks are now commercially extinct. All that we are fishing for now is the bottom of the food chain—it is lobsters, crabs, scallops and prawns. There is nothing left. If you want to restore biodiversity, you have to respect the fact that the fish spawning grounds and nurseries are in inshore waters—or they used to be, but they are no longer. Divers tell me that, back in the 1970s, you could dive along the west coast of Scotland and it looked like the Red Sea—not as colourful, but certainly as diverse. Now, in many of those places, it just looks like a desert. We need to address that. If we do not address that, trying to restore biodiversity at the scale that we are trying to do it is meaningless, because we are only doing it right at the fringes and not addressing the problem.

Ariane Burgess: National planning framework 4 has a policy section on coasts. Have you read it? What do you think about it?

Danny Renton: Are you talking to me?

Ariane Burgess: Yes. I am talking to everybody. I did not address that question just to you, but have you managed to look at NPF4? It is okay if you have not, because a lot of people have not.

Danny Renton: No, I have not. Can I make one further point about policy? The Scottish Government says that 37 per cent of Scottish waters are marine protected areas. That is a myth, because only 5 per cent of that is protected from bottom trawling and dredging, and we know that that 5 per cent is not really protected either. I will give you an example of that. Only the other day, I was standing at Craignish peninsula, overlooking one of the few MPAs that are protected against

bottom trawling, and that is because it is a nursery ground for the flapper skate. It was dark, and I was looking at a dredger that had just come into the MPA.

Dredgers are still not required to turn on their vessel monitoring systems. That has been promised by the Government since 2017, but it has still not happened. Of the 100 dredgers in Scotland, only 14 are required to turn on their automatic identification systems. I watched the dredger come in, and it had its AIS on—I was following it on the Marine Scotland tracker. It got into the MPA and it then turned off its AIS and its lights. That was right in the middle of the MPA, just as it was getting dark.

I am afraid that that is happening everywhere—we all know that it is happening—and Marine Scotland is powerless to stop it. Although some of the policies are there, they are just not being implemented.

Ariane Burgess: Thank you for that. I would like to hear from the rest of the panel about the specifics of the just transition.

The Convener: Just before we move on, I think that Rachael Hamilton has a supplementary question on that topic.

Rachael Hamilton (Ettrick, Roxburgh and Berwickshire) (Con): Mr Renton, do you believe that Marine Scotland is not doing enough to stop illegal trawling?

Danny Renton: Yes. Every single coastal community that watches the situation believes that Marine Scotland is not doing enough. It is not that Marine Scotland does not necessarily want to do it, but it does not have the resources to do it. For instance, if I were to ring up Marine Scotland, having seen a dredger in the MPA, where it is not supposed to be, and if I believed that it was acting suspiciously at night and turning its lights off, which is what normally happens, Marine Scotland would tell me that it does not work at night. Secondly, it will log the call.

In all the cases where dredgers have been caught, there has been just one fixed penalty, which is £2,000. That is meaningless for a vessel that goes into a protected area and starts to dredge it for scallops. The catch is worth infinitely more than that.

Marine Scotland does not have the resources, and it is currently not fit for purpose to do what it needs to be doing.

The Convener: You are making some very broad statements that such law breaking appears to be widespread. I would challenge that, as that is not what we have heard in previous evidence sessions. You have suggested that "much of the seabed" is destroyed. You are not quantifying that, and you are again making a very broad statement. We heard from marine scientists from the University of Aberdeen, who suggested that that was not necessarily the case. There were some isolated incidents of damage to the sea bed, but it was not "much of the seabed". Can you comment on what you mean by "much of the seabed"?

Danny Renton: All the evidence about the amount of sea bed that has been destroyed is there, including in "Scotland's Marine Assessment". Only two months ago, we discovered evidence of a scallop dredger inside our loch here, within metres of the shore, on a reef that is usually dived by scallop divers. We discovered that a scallop dredger had been up there relatively recently and had destroyed that shelf.

A few months ago, I was in the Loch Fyne marine protected area, just off Minard. There was a prawn trawler within metres of the shore, right up inside the MPA. Three weeks ago, there were reports of an illegal scallop dredger off Gairloch, which was reported to Marine Scotland. Last summer, divers went down in the marine protected area here off Easdale, and they found fresh dredging evidence in an area of conservation in which scallop dredgers are banned.

It may be said that it is not happening or that we do not know, but we have evidence that it is happening. You might take it from the industry or from Marine Scotland that it is not happening, but they do not know—you need to speak to local communities. More than anything, you need to speak to local divers, who will tell you how the sea bed has been destroyed. It has been fundamentally destroyed, all along the west coast of Scotland. The science suggests that that is why we do not have white fish any more on the west coast. We certainly do not have it in the Clyde, where all that we are fishing for now is prawns and lobsters.

You will be aware of the Lamlash no-take zone, which is just 2km^2. That has only been around for a few years. It was set up because of the Community of Arran Seabed Trust—COAST—group and the uptick in biodiversity there is phenomenal.

09:30

That is against a backdrop of—[*Inaudible*.]—in the Clyde, where the fisheries are absolutely dead. Only 100 years ago, it was one of the richest fisheries in northern Europe. We cannot overestimate what the lifting of the inshore limits has done to fisheries at the cost of economic opportunity for many.

Ariane Burgess: To come back to my question on just transition, is there enough support in the

current policy environment to ensure a timely and just transition for coastal sectors and communities? If anyone else on the panel wants to respond to that, I would appreciate it. Also, just chime in if you have read the section on coasts in NPF4.

Dr Rennie: On the just transition point, we have made a start from a little higher up the water than what Danny Renton was referring to earlier. We have looked at the amount of erosion that is happening from a coastal perspective and we have taken into consideration the social vulnerability of our communities. We have used the Scottish index of multiple deprivation and some of the census data to support that approach. It is the first time that that has been done from a coastal perspective in Scotland and it is about trying to get a better understanding of the coastal erosion disadvantage, which is similar to the flooding disadvantage that the Scottish Government has looked at.

That approach provides an opportunity for local authorities and other organisations to better understand the social resilience and the social vulnerability of their communities in their exposure to coastal erosion now and in the future. Although we may not have a direct, perfect relationship there, as far as deploying that tool is concerned, because the science is still new, it is a tool that can—and, I hope, will—be used by partners.

I have read NPF4 and I think that it is an improvement on NPF3. It builds on earlier iterations. Some further improvements could still be made. As I understand it, we are in a consultation phase, so I am sure that comments will be coming in from various different partners. It is a step in the right direction, with some further opportunities to improve.

Ariane Burgess: Thank you. Would anyone else like to come in on the just transition aspects in their areas?

Rachel Shucksmith: Yes. There are two parts to a just transition. At the moment, we are very focused on ensuring that a just transition enables, for instance, the electrification of vessels. However, we also need to think about a just transition for communities. In Shetland, we have a lot of offshore wind planned and we have tidal potential. That is true of other communities such as Orkney. Currently, the just transition conversation does not tend to focus on where the impacts of housing that technology will occur. There is currently quite an urban perception of just transition—it is about how we will all recycle more, use less, electrify our homes and so on. However, that view ignores distributive justice, which involves thinking about where the impacts of transitioning are occurring rather than whether we can afford to implement the measures.

That aspect is an important part of the transition process for rural communities because they are the ones that are predominantly housing those big technologies. There is the potential to receive quite big benefits from that in terms of employment, but there are also all the negative impacts that will be felt in those communities, such as visual impacts and loss of access on land or on the sea. When we think about just transition, it should also be an opportunity for the Scottish Government to think further about what justice means for those communities.

Also, there is very little diversity in the jobs that are being created; at the moment, they are predominantly for white men. Although those involved are very good employers for our rural communities, they do not employ a diverse range of people on gender or race. If we are talking about renewables justice, justice surely has to talk to some of those other elements that make up a just society. It is about asking who the impacts are being received by and who the beneficiaries are, and helping to ensure that that is spread across all elements of society.

Beatrice Wishart (Shetland Islands) (LD): Good morning. I will ask Fiona Read about entanglements in creels. In her opening statement, she indicated that only 5 per cent were reported. I want to understand a bit more about the numbers of fishermen involved in the project, in order to get an understanding of the figures and who is reporting.

Dr Read: We interviewed 159 fishers across the creel industry, which represents just over 11 per cent of the industry in Scotland. From among those fishers, there were 146 reported entanglements. The majority of fishers had experienced only one entanglement, a few fishers had experienced two entanglements, and one fisher had experienced nine—he had nine basking sharks in a short period of time. He felt that he had maybe not cleaned his gear enough in between entanglements and that the animals had been attracted. He was the only fisher who had experienced a large number of entanglements, and he said that he had released them all. For the majority of fishers, the number is very small, although more than half the fishers had experienced an entanglement.

In order to get higher numbers for reports of entanglements, the solution is not what we would do for other bycatch incidents, which is to put observers on board, because that would not be financially feasible. We have therefore been trying to raise the profile of the reporting schemes for fishers, so that they know that help is there for them. The majority of them had released the animals themselves, which is quite dangerous. We have been trying to tell them that there is support.

If the animal is dead, they should report it to the Scottish Marine Animal Stranding Scheme. We have also provided them with brochures for the wheelhouse so that, if the animal is alive, they have numbers to call for assistance.

Reporting has been low because fishers did not know who to report an incident to, or because, when they have the animal in the gear, their immediate reaction is simply to try and release it for its welfare or because it has already died.

Beatrice Wishart: That is helpful. The point about the safety of fishermen was well made—that applies across the board.

What will happen with the project now, given that it is not clear where the funding will come from following exit from the European Union?

Dr Read: It was a two-year project funded by the European maritime and fisheries fund. Although it finished in March 2020, the final report is not out because of delays due to Covid. However, the report should be out next week or the week after.

Currently, there is no funding for the project. We applied for funding from NERC, but our application was not successful. One of my colleagues, Ellie MacLennan, who was the project manager, is carrying on small aspects of the work, as she is looking at entanglements for her PhD. However, funding for the SEA project is finished.

Beatrice Wishart: My final question is about the impact on the fishing fleet of marine animal entanglements—and not just inshore, as there is also a problem with gill netters. Can you say anything about that?

Dr Read: There is not much data in relation to the bycatch of cetaceans in gill nets in Scotland, because there are fewer observers. The majority of the work so far has been concentrated off the south-west of England. I hope that we will start a project to speak to gill net fishers about bycatch, but that is separate from the SEA project.

I am sorry—what was the first part of the question?

Beatrice Wishart: It was about the impact of the entanglements on the industry.

Dr Read: We asked the individual fishers about the economics of the entanglements, and nearly all of them said that they were not worried about the economic impact because they normally lose gears to bad weather and, quite frequently, to the mobile sector. Their main concern was for the welfare of the animal.

The problem is that, if entanglements are associated with creel gear, there is a lot of focus on that in the media and on social media, and the industry gets a bad name. However, it is not the fishers' fault; they do not want to catch the animals. We have been trying to create a positive profile for the creel fishers, because they really worked with us on the project—indeed, they initiated the project. I hope that that comes through.

The Convener: I read a report from back in 2016 that suggested that the number of entanglements of humpback whales in inshore Scottish waters was of a proportion that would mean that the species was unsustainable, and that Scottish inshore waters could act as a high mortality sink for the species in the north-east Atlantic.

Given that we are in 2021 and that there has been a substantial increase in fixed lines, creels or whatever, which have generally been unregulated, do we need to act now to regulate the industry? Do we need to push forward with policies that will help creel fishermen ensure that entanglements happen far less frequently than they happen just now, particularly given the underreporting that you have suggested?

Dr Read: We asked fishers about the measures that we could try in order to reduce marine animal entanglements. A lot of fishers reported that there needs to be regulation of the industry and solutions to the conflicts with the mobile gear. That paper is being updated at the moment.

Mercedes Villalba (North East Scotland) (Lab): Good morning. I have two questions. We have spoken about solutions to marine animal entanglements and the sustainability of current fishing practices. Does the Scottish Entanglement Alliance have a view on the relative sustainability of creeling over trawling if they take place in the same area of inshore waters?

Dr Read: Creeling is seen as a LIFE—low-impact, fuel-efficient—gear. The creel fishers said that the mobile sector often tows its gear, which is then dumped; they do not know where their gear is dumped, so they cannot retrieve it. The fishers know where their gear is and how many creels they are fishing with. They may then lose a lot of gear to bad weather or to the mobile sector, which means that there is an unknown number of creels and amount of gear in the water.

Even if the industry is regulated or there are solutions, there will still be a huge amount of gear in the water and we will have no idea where it is, how many creels there are or how to mitigate that. Creel fishers also said that they do not have anywhere to dispose of their gear. That is another thing that needs to be improved in harbours or around the coast.

09:45

Mercedes Villalba: I have one more follow-up on reporting the entanglements. Do you think that monitoring and recording could be delivered through the use of remote electronic monitoring equipment on the larger boats—on trawlers?

Dr Read: Do I think that electronic monitoring will—

Mercedes Villalba: Would it improve the reporting and monitoring of incidents if larger boats were fitted with electronic monitoring equipment?

Dr Read: Probably, but we did not speak to any trawl fishers during the project; we spoke only to the creel fishers. We suspect that the trawl fishers might have issues with bycatch, but we are not sure because we did not speak to any of them. We originally planned to speak to them, but as the project developed we focused on the entanglements in the creel industry to get an overview of the situation in Scotland. Some of the species had never been reported in entanglements, strandings or live entanglements. We got a much wider range of species than we had initially thought we would, and entanglements were happening all around the coastline, whereas we had thought that there would be hotspots. We did not expect entanglements to be so widespread.

Rachael Hamilton: You are getting a lot of questions from us, Dr Read—it is an interesting subject. How does your organisation believe that you can improve monitoring of the bycatch? It sounds as though you need a lot more people feeding in, but what is the process for gathering that data? Is it something that you want to take forward in your work, and do you need extra funding to be able to do that?

Dr Read: We definitely need extra funding. However, a legal obligation has recently been introduced for fishers to report entanglement events, so we hope that reporting will improve. Because our work with the creel industry has been so positive, we hope that, if fishers get an entanglement, they will know who to contact.

Solutions are available. We would like to trial weighted rope on the ground line of the gear, and to trial ropeless gear, which is like an on-call gear, in areas where we know that there are potential hotspots for certain species. However, there is no funding for that at the moment. We have the support of the fishers, but the work is not going forward because of lack of funding.

Jim Fairlie (Perthshire South and Kinross-shire) (SNP): I am afraid that you are getting another question. As somebody who knows nothing about fishing, it sounds a wee bit like the wild west out there.

You said that you were funded by the EU on a two-year project. How much was that funding, and who did you say you applied to afterwards for funding, when your application was refused? I missed that last bit.

Dr Read: The second part of funding that we applied for was NERC funding.

Jim Fairlie: Which is what?

Dr Read: It is the Natural—I will have to look it up. I think it is the Natural Environment Rural—no; what is it? I will Google it in a minute.

The Convener: We can come back to you. We will write to you for further information. We will not put you on the spot now—I know how difficult acronyms can be.

Dr Read: I am sorry. I will also have to check how much funding the project received, but it came from the European maritime and fisheries fund via Marine Scotland, and it was project managed by NatureScot.

Jim Fairlie: Thank you.

The Convener: We move on to the topic of seawilding, which Ariane Burgess will kick off.

I am sorry, but I forgot that Danny Renton had indicated that he wanted to speak on this topic.

Danny Renton: I have a point to make about entanglements. I spend a lot of time on the Isle of Tiree. In the past few years, about 200 tonnes of beach litter have been collected by volunteers, and about 80 per cent of that is fishing gear, a lot of which is creels that do not necessarily originate on Tiree. Creels reach a certain buoyancy when they get wrapped up in their lines and they can get towed by the mobile sector, so some of that litter may come from afar. It is noticeable that none of them is marked or labelled. Even if a fleet of locally owned creels got washed up in a storm, no one would know who to call to come and salvage or re-purpose them. Some form of marking or labelling would be very helpful.

Ariane Burgess: My questions will be directed towards Danny Renton, but other witnesses may want to come in, too.

I am impressed by your project and your aim to empower communities to manage their own inshore marine environments while addressing biodiversity loss, sequestering carbon and creating green jobs. Will you say a little more about the benefits that you have seen from community-led marine restoration and enhancement? Has it led to increased employment, community empowerment and cohesion, and perhaps even repopulation?

Danny Renton: Our project has been running for only a year and a half, so it is a little too early to say what biodiversity change we will see over time.

We are putting back 1 million native oysters—we have put down about 300,000 so far. The survival rate on the sea bed is about 40 per cent, so things are looking really good. Our long-term hope is that, if we can restore native oysters to the sea loch in abundance, we can set up a sustainable community oyster fishery.

You asked about green jobs. We have one full-time employee and five people working part time. That work is connected to the seagrass. We are planning to scale up. There is real hunger for that around the Scottish shoreline. The Coastal Communities Network has 18 member groups and many of them are interested in what we are doing. Next year, we plan to roll out to Arran, Knoydart and to the Friends of the Sound of Jura. We are helping Edinburgh Shoreline with some consultancy about its seagrass and oyster projects. I think that there will be many future green jobs in this work, and there is the potential for sustainable fisheries if we can get biodiversity to return.

Ariane Burgess: What support would be needed from the Scottish Government, Marine Scotland or others to scale up or extend the project along the coastline?

Danny Renton: Such marine habitat restoration is very new. The science is new and there is not really the infrastructure to support us at the moment.

Licensing is problematic. We have to apply for up to four licences because licensing is site specific. We want to work at a community level. Once we have established that there is an ecological restoration opportunity and that there is a community that can deliver it, we then have to go through the licensing process. That was immensely complex when we started, three years ago. We were treated as though we were a salmon farm. It is getting easier. Marine Scotland and NatureScot understand what we are doing and there are specific individuals we can talk to who are receptive to what we are doing. The environment is more enabling.

If we really want to scale up, we must talk about funding. Getting funding is hard. We are a small charity and I spend all my time fundraising. We have been very fortunate in getting a national lottery grant, which has enabled us to work with native oysters at scale over a five-year period.

NatureScot has been wonderful and has given us a large grant to carry out a proof of concept on the seagrass restoration project, which we are close to finalising. Part of that involves a lot of science. It is very important to show things such as carbon sequestration and environmental DNA, and to look at biodiversity change over time. However, those are decadal research projects, and an issue that we have is that our funding comes to an end in March next year. We have started all those different research projects, but the funding is coming to an end.

It is therefore incumbent on us, as a small charity, to go out to all the respective philanthropic donors and try to get more funding. We are confident that we will do that. However, we understand that the Scottish marine environmental enhancement fund—SMEEF—will not come into play until towards the latter half of next year. That is too late for the second phase of our seagrass project.

We do not want to drop the ball now that we are running with it. Funding is important. It is about getting those ducks in a line so that we can roll-out the projects at community level and at scale. Not only is there a hunger at community level to restore biodiversity for economic, welfare and wildlife reasons; there are green jobs in doing so. There is a real opportunity for Scotland to restore what has been lost.

Dr Rennie: The question comes back to two aspects. We must understand the need—where we can do more—and then ensure that the funding is aligned with that need so that it works more effectively and trickles across into different sectors.

I entirely agree with what Danny Renton has just said about funding. However, in the coming years, there will be more of that—indeed, we are already doing more. As you may all be aware, the Scottish Government has announced a large multiyear nature restoration fund of £50 million. Just last week, this year's allocation of £5 million was announced. Some £80,000 of that is going to the St Andrews Links Trust. Those are the folk who run the world-famous golf courses, but they also look after dunes. They have been doing Scotland's largest coastal nature-based solutions project there, which makes the sand dunes more resilient, while conserving nature.

We need to look at the challenge that is coming down the track with climate change and the nature emergency for two reasons: for resilience and making sure that we do not get impacted by events; and for biodiversity and reasons of nature.

The funding—or some of it—is coming, and Danny Renton has alluded to a few elements of that. More will have to come as the evidence improves our ability to identify a need, a risk or an opportunity. We will then need to make sure that we are able to enact that change, on the basis of the best available evidence.

This is about taking multiyear, joined-up and dynamic approaches. The solutions to today's problems will be slightly different from the solutions in 10 years and in 50 years. We need a dynamic and adaptive approach to the twin challenges that we face in how best to manage things with our communities, for local circumstances and local nature today, and in looking forward at how that changes through time.

Rachel Shucksmith: I will give an example of the benefits that can be brought to communities. When the Scottish Parliament agreed to a fishery regulating order for Shetland, that meant that the local fishery could be managed by the community. That allowed a number of measures to be brought in. The number of scallop dredgers that could be put on each boat was restricted. That meant that, instead of a few big boats, we have a larger number of vessels. That has helped to maintain and increase employment.

The fleet was able to implement a range of conservation measures that allowed it to gain Marine Stewardship Council accreditation. The Shetland scallop fleet was the first dredge fishery in the world to get such accreditation, which has helped it to maintain a market advantage and has empowered communities to have local control.

Fishery communities across Scotland have declined. Fishing employment has declined. However, local control can help to prevent that loss of jobs. It is not just about job creation—better management can prevent our losing jobs. Conversely, we do not really have control of our own white-fish waters. I voted to remain in the EU, but one of the reasons that a lot of fishing communities did not is that they were told that they would have better management and that that could be greener.

10:00

One of the bugbears of my local community is international vessels putting out long lines that are lost. That marine litter causes large numbers of harbour porpoises to become entangled. It disincentivises our Scottish fleet from increasing conservation measures if, from their perspective, the international community does not adhere to those aspirations.

It is also a lost opportunity for jobs. If Scotland took greater control of its quota in a way that was promised but was probably never achievable, all the fish stock that is being caught by international boats could create local employment more sustainably than it does at the moment. In its inshore regulating order—the Shetland Islands Regulated Fishery (Scotland) Order 2012—the Shetland Shellfish Management Organisation demonstrates how employment can be sustained and local biodiversity targets can be achieved by maintaining a fishery. That has not been achieved in our offshore waters, which is causing a range of impacts.

Ariane Burgess: Thank you for that, Rachel.

I will pick up on a couple of things that Danny Renton said. What amounts of funding are we talking about for a coastal community to do a local restoration project?

I was in Danny's area during my summer recess. When I was on Loch Melfort, I spoke to some folk who run a restoration project on the other side of the loch, I think. They mentioned your work and talked about the difficulty of the planning process for bringing about their native oyster restoration. Is it a common issue that the planning process is onerous? What do we need to do to support local planning authorities to support such restoration projects?

Danny Renton: I will deal with your point about planning and licensing first. For particular projects, you need to get planning permission and then you need an aquaculture licence—[*Inaudible*.]

Ariane Burgess: Oh no.

The Convener: It looks like we have lost Danny Renton for the time being. The other witnesses are still available, so we will move on to—

Danny Renton: [*Inaudible*.]—may need, depending on where you are, a Crown Estate licence. You may then need a marine construction licence and, making it easier for communities—[*Inaudible*.]

Can you still hear me? I am sorry about that.

Ariane Burgess: Yes, we can.

The Convener: Danny, I do not know whether you can hear us. We will move on to another witness and see whether we can get your connection to be a little bit more stable.

Beatrice Wishart: Rachel Shucksmith has answered many of the questions that I was going to put to her about the order that the SSMO regulates. She has already touched on how important devolving matters to local communities has been in relation to the regulating order and she has also answered the questions that I had about gill netters and marine litter.

The regulating order is underpinned by continued scientific evidence. I know of the work that goes on at the marine centre at Scalloway. Over the past few years, what have the impacts of that been on the marine environment and in terms of the climate emergency?

Rachel Shucksmith: The main benefit in terms of the climate emergency relates to the closed

areas, because those habitats are carbon sequestrating. The benefit of having a strong inshore fleet is that it is a local one, so we are accessing local grounds from close locations.

Some of our fishing methods, such as those that the pelagic fleet uses, are low-carbon food-production methods. Fishing is one of the lowest-carbon food-production methods that we have. It is much lower in carbon than on-land production. That is particularly the case for the pelagic trawl approach. Because it does not touch the sea bed, it is a low-fuel approach.

As Scotland continues the journey and considers how we can further reduce our carbon impact, fishing must be part of our food security and our low-carbon food-production methods.

Beatrice Wishart: I would like to hear a bit more about seas being crowded with renewables, offshore wind farms, fishing and so on. How can we ensure that all the sectors work together?

Rachel Shucksmith: What could minimise any impact is having adequate evidence of where the fishing grounds are. It is often based on the—[*Inaudible*.]. They position the boats every two hours. The presumption is that boats travel in a straight line between those two hourly points, but that is not necessarily the case. Stronger evidence is being utilised at the moment that can help reduce impacts, but as we move towards our target of 100 per cent of energy from renewables, it will be difficult to avoid all impacts on or conflict between the two sectors.

Inevitably, some activity will take place in fishing grounds. The perception is that fishermen fish everywhere, but they fish in specific places. Avoiding those places would lead to the most desirable outcome. It has been estimated that they fish around 40 per cent of the sea. If new technologies are placed in that 40 per cent, and we consider the necessary creation of marine protected areas, the amount of sea in which they can fish will get squeezed and squeezed. That will inevitably have impacts on our local fleets.

In short, data and knowledge of where fishing boats fish is key to dealing with unnecessary conflict between emerging sectors and existing users.

Beatrice Wishart: I suppose that we also need to ensure that sectors are involved in on-going discussions. Communities feel that things are being done to them rather than with them or without people being brought along.

The Convener: Rachael Hamilton, Karen Adam, Jenni Minto and Mercedes Villalba all have supplementaries.

Rachael Hamilton: Michel Kaiser, the chief scientist at Heriot-Watt University, has said that it is time to find places where dredging scallops does the least damage to the environment. I have to wonder at the simplicity of that statement, given that we are talking about protecting jobs and livelihoods.

Rachel Shucksmith: There is definitely an opportunity for that to happen. Much of our sea is dynamic. You could find areas of the sea bed—sand beds, for example—where the sand moves and where levels can rise and fall by a couple of metres each year. There are locations where the impact of dredging will be minimal, given the natural dynamic nature of the marine environment.

In Shetland, where I live, that environment is, indeed, dynamic, and many of the places where the scallop fleet fish would get naturally disturbed. I realise that that is not necessarily the case for the whole of the Scottish coastline, where the environment can be much less dynamic, but I can speak only about where I live.

As I have said, there is an opportunity to try to achieve what Mike Kaiser has suggested. There will be better places for different activities, and more localised management might help to identify them. In Shetland, there are both local fishing fleets and fleets that roam, but, because of the regulating order, we do not get any roaming vessels that might inadvertently damage habitats that they are unaware of. That is different to the situation in the rest of Scotland.

Karen Adam (Banffshire and Buchan Coast) (SNP): In the light of their experience, how do the panellists think that we can improve the way in which we bring together private, public and third sector organisations from across the globe in order to increase our knowledge of blue carbon and to identify how we move from research to action? Are there any barriers to research and development that we should be aware of?

The Convener: Perhaps Dr Rennie can kick off with that question.

Dr Rennie: From a coastal perspective, I think that we are making good inroads on the specific issue of blue carbon and private finance, and there are further opportunities to come. Indeed, the SMEEF, which Danny Renton alluded to, is a NatureScot project that attempts to bring public and private finance together.

The challenges that we face relate not only to biodiversity loss or having to make improvements in that respect but sequestration. I would echo the thoughts of the previous cabinet secretary, Roseanna Cunningham, who talked about the need for joint approaches. We cannot have an approach that deals only with problems of mitigation or only with problems of adaptation; instead, we need to find those wonderful places in our marine, coastal and terrestrial environments

where we can get mitigation and adaptation benefits, and finding a better way of sequestering carbon in our coastal system will provide both. After all, our challenge as we move forward will be to deal with both issues. New work and new funding are coming, but we will need more of both as time goes on.

Danny Renton: With regard to blue carbon, my understanding is that 99 per cent of the organic carbon in the sea is locked into the sediments. Our sea loch, which, as I have said, is still dredged by dredgers that come in as far as they can for scallops and perhaps prawns, has a lot of burrowed mud. To date, that has been a very efficient carbon sink, but every time it is disturbed, it potentially becomes a carbon source. There is still a huge amount of research to be done on that. If we are dredging up most of the Scottish sea lochs and ripping through those ecosystems, that is not just a biodiversity but a carbon source problem.

We need a whole-ecosystem approach. A priority marine review has been promised since 2019 as a result of the dredging of the flame shell reef in Loch Carron, which then became an MPA; however, despite the Scottish Government's announcement of that review, it still has not happened. It was to look at finding ways of protecting priority marine features, but the fact is that a lot of the priority marine features in such inshore areas have gone because the sea bed has been destroyed. If we want to bring back biodiversity, we need to look at what is happening with the no-take zone in Lamlash Bay, which shows how quickly the sea bed can recover, to the benefit of many—including fishermen, as long as they fish sustainably in future. We have to look at the whole ecosystem, not just individual features, and we need a joined-up approach from all the agencies.

Jenni Minto (Argyll and Bute) (SNP): I thank members of the panel for their informative evidence.

Two weeks ago, we heard evidence from a panel of academics, who suggested—this follows on from what my colleague Rachael Hamilton was asking about and, to some extent, what Danny Renton has just said—that we cannot keep oceans in one particular state, as nature will take over. They also said that we need to look at the overall protection of ocean areas instead of focusing on just one area. I wonder whether you can expand on those two ideas from your perspectives.

As an aside, I say to Dr Rennie that I believe that the St Andrews Links Trust is using old Christmas trees to stabilise the sand dunes at St Andrews. However, I would be interested in hearing his thoughts on looking at the ocean as a whole.

Dr Rennie: St Andrews provides an interesting case study for the marine environment. A virtuous circle has been created in the St Andrews area. We have successful businesses that care about the environment and are investing in nature and nature-based solutions, and they are bringing the community with them. All those parties are also appreciative of the natural environment that they have inherited.

10:15

A nice example of that is what Fife Council does with Christmas trees. Those are collected, then stockpiled and made available, instead of being shredded for compost. Some of them are used to help to stabilise the lower parts of the sand dunes, along with sand that has accreted on other areas of the beach in previous years.

We need to foster that collaborative environment in which science is tailored to local circumstances and supports more resilient businesses that care about their environment and help nature. They can keep us on the right track in managing the growing pressures of climate change, either at the coastal edge or lower down in the marine environment.

Jenni Minto: Danny Renton, do you have any thoughts on what I said about not being able to keep oceans in one state because nature will take over?

Danny Renton: As I said, we know that Scotland's only no-take zone, which is absolutely tiny, has proved that biodiversity returns very quickly and to everyone's benefit. That is what we need to do. We need to think about a just transition and to work with any fishermen whose activities are problematic. I hope that we can bring everyone together to recognise that our long-term goal is to sequester carbon, to restore biodiversity in inshore waters and to work together to maintain that for the economic benefit of everyone. That is the way forward. It makes sense.

Sweden is trialling a bottom trawling limit of 12 miles from its coastline. Other countries are doing it and we should be doing it. We used to have one of the richest fisheries in the world. Now, up the west coast, we are fishing at the bottom of the food chain, which is completely unsustainable. However, it is reversible and we should be doing that.

Mercedes Villalba: Rachel Shucksmith, the Shetland spatial plan is held up as an example of good practice. One aspect of that is that scallop dredgers are all fitted with tracking devices. Is that tracking a good thing? Should it be rolled out to

the rest of Scotland's inshore fisheries? Should the Scottish Government consider delegating powers for the local management of other inshore fisheries?

Rachel Shucksmith: Tracking enables vessels to prove that they are adhering to the conservation measures that they are benefiting from. It also provides an evidence base for issues such as marine renewables. Tracking has benefits for the fleet. If boats are accused of not adhering to the measures, they can prove that they were adhering to them.

It is my understanding that the Scottish Government had the aspiration to roll out a tracking system but that that has been delayed, for a range of reasons. I believe that the Government still intends that to happen. The cost and burden of that, including of the enforcement elements, would be taken on by the Scottish Government, which I believe is the SSMO's preference. That would provide a level playing field for the whole of Scotland.

It would be beneficial for the IFGs to have more powers to replicate the successful Shetland model of the SSMO in the rest of Scotland. In these increasingly difficult financial times, it will always be challenging to resource that at a national level. Things were already financially challenging, and now we have had Covid. It will always be a difficult political decision to spend taxpayers' relatively limited money.

I am sorry, but I cannot remember your first question.

Mercedes Villalba: Do you think that the tracking is a good thing? It sounds as though you do.

Rachel Shucksmith: It was beneficial in proving that the fishermen were adhering to the rules. They were, and we could prove that they were. That helped with the evidence base.

Mercedes Villalba: I have one question for Danny Renton, now that we have him back. A couple of weeks ago, the committee heard about the lack of commercially viable white-fish stocks on the west coast. It is great that Seawilding is working to recover inshore ecosystems and to provide better nursery grounds for fish species, but that is restricted to the project at one specific loch. What should be done to recover cod and herring stocks on the wider west coast?

Danny Renton: One of the problems when it comes to the marine world is that there is a lack of baseline surveys. We have an idea of where the maerl and seagrass beds and the rich habitats that used to be the spawning grounds for fish such as cod and herring were, but a lot of them have been destroyed. We need to understand where those habitats still exist and then give them proper protection. In my opinion, we should protect the whole inshore environment. That is where the nursery and fish spawning grounds are.

White-fish stocks are commercially extinct on the west coast. We have to look at the data. There is a real correlation between the lifting of the 1984 inshore limit, after which dredging was allowed in, and the collapse of fish stocks within about 10 years. I can remember going fishing for halibut and whiting when I was about six years old. It was in an area about a mile off Tiree called the Scarinish bank. It was a community resource where everyone went to get their white fish. It was destroyed by dredgers within a matter of years.

We need to understand where the white-fish stocks were and how we can bring them back. We need to have meaningful marine protected areas to do that.

The Convener: You made a suggestion about baselining information. It is a very general and broad statement to suggest that dredging has been solely responsible for destroying our inshore nurseries. That is why baseline information is so important in informing our decisions.

Shetland has done a huge amount to address the crowded sea argument and to remove unnecessary conflict. There are other areas of Scotland, such as the Solway Firth, where fixed and mobile gear fisheries work well together. Rachel Shucksmith, do you believe that we need legislation and additional funding to ensure that we have such successful partnerships across Scotland?

Rachel Shucksmith: Yes, I imagine so. The Shetland marine planning partnership is funded by the Scottish Government. The Shetland, Clyde and Orkney partnerships are in the process of developing plans. Data collection and mapping have been a large part of that. It would have been a bad idea for the Scottish Government to start all the marine planning partnerships at once. The Government did not do that, which gave an opportunity to look at lessons learned.

The cost of having all the partnerships running at the same time was also a barrier. There was a budget proposal to run all the marine planning partnerships at once, but that has not happened. It is my understanding that cost was one element of that decision.

Dr Alasdair Allan (Na h-Eileanan an Iar) (SNP): My question is for Dr Rennie. I am interested in what has been said today and in some of the written evidence that we received about rising sea levels and the need to prepare for that in infrastructure terms. I am keen to hear more about the costs that you anticipate. I have seen a figure of £1.2 billion as the potential cost

for infrastructure between now and 2050. Can you tell me a bit more about what that means?

Dr Rennie: Yes—I am happy to do so. The £1.2 billion figure is the headline number that came from the "Dynamic Coast—National Coastal Erosion Risk Assessment" document. Under that, we took a precautionary baseline, which assumes that we continue on our current high climate emissions trajectory for the rest of the century and that we do not maintain any of the coastal defences that are currently in place. When we plotted the future erosion in that situation, and laid it on top of the extent of our roads, railways and residential property, the costs for those three items together came to the value of £1.2 billion.

Under a high-emissions scenario, that is the potential exposure in respect of roads, railways and residential property, which are the three things that we could readily cost. In a low-emissions future, if we achieve net zero quickly, that cost falls to £800 million. The project demonstrates, therefore, that there is a cost saving in direct avoided damage costs of approximately £400 million from net zero, which, in and of itself, is quite helpful to know.

More generally, however, I would encourage you to look at the broader picture, which is more important. The evidence base is now available to enable various organisations to make better judgments and decisions on the back of it. NatureScot, the Scottish Environment Protection Agency, Transport Scotland, Scottish Water and various local authorities are using the data to start to explore and plan ahead. Not all those risks will present themselves tomorrow morning; they will increase into the future, through time. The monitoring, risk assessments and strategies that will be needed can be, and are being, worked forward as we plan ahead.

Dr Allan: Is it fair to say, given that you have looked at a limited range of things, such as roads, railways and houses, that there may be other costs that local authorities should anticipate? There is an example from my constituency—I know that I always use the same example—where a school had to be moved as a direct result of rising sea levels. Are there other areas in which you anticipate that costs might arise? I know that other areas are not part of the study, but could they be costed?

Dr Rennie: The short answer is yes. The figure of £1.2 billion came simply from the fact that we had the cost for the replacement of a length of road or railway and residential properties are easily priced. What is not easily priced is commercial property or a length of water pipe. We have those data sets—we just do not have the costings that are associated with their replacements. In the Dynamic Coast project, and with our partners, we have received data from various organisations, and we can do a risk assessment on the back of that. We have the numbers at least, which is a step change in our understanding.

That is essential to enable us to build up our planning. Each organisation has its own responsibilities. It is for local authorities to take forward that understanding and plan ahead, and they are now able to do that.

Dr Allan: So, you feel that they are now able to do that. Again, I am not sure whether this forms part of your remit, but do you see evidence that organisations have been brought together to think about those questions strategically and to look as far ahead as you are looking, to 2050?

Dr Rennie: The very presence of the Dynamic Coast project confirms that that is the case. Our remit is to improve the evidence base and to support others in delivering on their statutory obligations. Just as local planning, flood risk management planning and development planning are reliant on SEPA flood maps, that is increasingly the case with coastal erosion mapping, as NPF4 and other policies—as was alluded to earlier—expect it to be.

10:30

We are getting there. The challenge is increasing and we will increasingly have to step up. Over the past handful of years, there has been increased awareness in, and interest from, local authorities, which have responsibilities under the Coast Protection Act 1949, and they have acted in that area. As noted in the programme for government, the Scottish Government has secured funding for plans to undertake coastal change adaptations in the coming years. That work is on-going. Other policy colleagues will be able to answer further questions on that, but work on that is coming in the next few years to move things further forward.

Dr Allan: Finally, your comments have mainly been about adapting to the new reality rather than hard engineering solutions. Where do hard engineering solutions in coastal communities or, indeed, communities by rivers fit into the plan and costs?

Dr Rennie: The challenges that we face are a mosaic. Climate change is a risk multiplier and it will affect different parts of our country in different ways. We have looked specifically at the open, erodable coast, because we can model that most readily with the science that is available to us now, but there are other risks, which you have alluded to. Rainfall intensity, river flooding and other pressures and risks are also changing through

time, and organisations and local authorities have to manage that broader responsibility.

I think that we are moving in the right direction and that there is certainly more that can be done. Some parts of our coastal system have benefited from coastal defences over the years. For example, we would not have Skara Brae in Orkney—Skara Brae is a world heritage site—if we did not have a sea wall. We are all richer as a result of that. The problem with sea walls is that they tend to reflect wave energy, scour the beach in front of them and cause erosion to appear in adjacent areas, so they need to be used proportionately and carefully and in the appropriate places.

Adaptive approaches—or greening the grey—in which we use softer, nature-based solutions alongside traditional engineering methods are increasingly important. We have realised that through our collaboration with international researchers. That means having a composite approach that depends on local circumstances. In some places, we might need higher sea walls with bigger foundations, but we need to use that solution sparingly. In other places, it will be more effective for us to adapt, avoid and pick our fights. In some places, we can buy some time, use it to invest in nature, and make our natural systems more resilient. We can absorb wave energy further away and stop flooding penetrating quite so far into our areas. Those measures buy time.

However, arguably, when we think about our future sustainability, we want to be inherently sustainable and resilient, and understanding how the landscape and our use of it change with time is key to that. We do not want large repair bills. Nature-based solutions are one tool for flexibly responding to that, as we learn to adapt, and do adapt, to our future climate.

The Convener: Local authorities are responsible for the development of shoreline management plans and so on. In March, my local authority in Dumfries and Galloway began a consultation to look at those challenges and to set out a list of policy options. Are you involved in that? Is there a national framework for policy options and the funding of pinch point and critical interventions that are required?

Dr Rennie: I think that you are alluding to the shoreline management plan that Dumfries and Galloway Council was developing and consulting on. For shoreline management plans, local authorities take the coastal change information, which we have developed—in essence, we have done the first part for them, which saves everyone a little bit of money, which is good—and they then develop local policy aspirations for different stretches of the coast. We have something important there, and we need to hold on to it. If we cannot adapt, we will maintain a sea wall. In other locations, we will have a non-interventionist approach, for example.

Shoreline management plans have been used in different parts of Scotland. We do not have full coverage. That is a policy gap, but improvements are being realised through cross-organisational discussions about that. Again, I note the £12 million of funding from the Scottish Government, which allows the exploration of how we can do that most appropriately. A really important part of our resilience planning is how to get the evidence forward, take on board the local circumstances of communities, and maintain resilience—protection from flooding and erosion—by being smarter and picking our fights.

The Convener: That brings us to the end of the session. Once again, I thank all the witnesses for setting aside time in their diaries, given the delay last week. That is very much appreciated, as is your very useful evidence.

I suspend the meeting briefly to allow a changeover of witnesses.

10:36

Meeting suspended.

10:42

On resuming—

The Convener: I welcome our second panel of witnesses, with whom we will discuss the role of the Scottish public agencies on nature and the environment. They are Terry A'Hearn, chief executive of the Scottish Environment Protection Agency; Grant Moir, chief executive officer of the Cairngorms National Park Authority; Graham Neville, the area manager for northern isles and north Highland at NatureScot; David Signorini, the chief executive of Scottish Forestry; and Andy Wells, investment and sales programme director at Crown Estate Scotland.

I invite each of the witnesses to make a brief opening statement.

Terry A'Hearn (Scottish Environment Protection Agency): Thank you, convener, and thank you for noting that I have to leave early for a national health service appointment. Apologies to the committee for that.

From SEPA's point of view, the most important thing in our contribution is a fundamental change in the way in which we regulate. Around the world, environmental protection agencies have done the right thing in their first 20 or 30 years, in what I call a mass transaction approach. We go to lots of factories and other businesses and get them to improve their environmental performance—we get

them to reduce phosphorus discharges to a river or a loch, for example. That is still a fair bit of what we will do. However, in the next phase, we can play a role in improving the environment in Scotland not only in general but in particular in our rural sectors and communities by taking more of a systems approach.

For example, we regulate the whisky sector and the barley growers. In the first phase, we would do that pretty separately. We would just go to a distillery and make sure that it met its licence obligations, and we would have general requirements for barley growers, do some farm inspections, and so on.

Rural communities face the challenges of climate change, such as water scarcity. That is becoming a more regular and prominent challenge for rural communities and, in particular, sectors that are water dependent. How can we take a more systemic approach, sit down with the whisky industry, barley growers and others, and ask how we can help them to reduce water use in their value chain and supply chain? That will help to protect the environment and reduce their economic risk from water scarcity.

We have taken a new approach in having sector plans for the 34 sectors that we regulate. We ask, "What is the challenge in this part of Scotland?" or "What is the challenge for this sector?" instead of simply taking an individual side-by-side approach. There might be systemic challenges in a rural part of Scotland where we regulate perhaps eight of the sectors. We consider what approach we can take to help them to come up with systemic solutions to systemic problems.

I will give another quick example. We have a sustainable growth agreement—which is our little blue chip voluntary agreement—with Nestlé in the Borders area. Nestlé wants to reduce the environmental impact of its supply chain, so it is working with dairy farmers in the area to help them to reduce their environmental impact. Therefore, rather than having the worst case of a regulator beating people up—which we need to do if people are doing the wrong thing and refuse any help—the regulator sits down with the big company to which farmers sell their produce. They look at how they can work together with the local authority and other environmental experts to help the farms to remain viable and reduce climate change risk and other types of environmental risk.

Those two examples illustrate that, if we take a more systemic and partnership approach in rural communities, we will still regulate activity and wield the stick if people need the stick, but the bulk of our effort can be on helping those communities to work out what the systemic challenges are and on working in partnership on systemic solutions. We think that we can make a stronger contribution with that approach.

Grant Moir (Cairngorms National Park Authority): The work on climate and nature is at the core of the work that Cairngorms National Park Authority does within the park. We have a new national park partnership plan out for consultation, which covers nature, people and place. That consultation will close on 17 December. The plan sets out long-term targets for the park that go out towards 2045.

Two things that we are currently doing will help with that work. We have undertaken a carbon audit of the national park, which will give us a benchmark for where we are and what key things we need to focus on around emissions. The other thing is the Cairngorms nature index work, which will give us information about ecosystem health in the Cairngorms and provide a good benchmark. That is important because we need to know where we are and what key things we have to focus on to deal with the climate and nature emergencies in the national park.

There is a whole programme of work that allows us to deliver peatland restoration, woodland expansion, river restoration and all the things that we do within the Cairngorms Nature partnership. A key aspect is our work with partners to make those things happen on the ground. Projects such as the east Cairngorms moorland partnership, Cairngorms Connect, rare invertebrates in the Cairngorms, rare plants in the Cairngorms and the Cairngorms Capercaillie projects are all delivering for the bigger and wider Cairngorms Nature partnership.

We have recently been successful in securing heritage horizons funding from the National Lottery Heritage Fund for Cairngorms 2030. That is a £40 million programme over the next seven years that will look at how we do the work around climate and nature. It will look at things such as public health, how we take people with us on that, and how the climate impacts on communities. There is a focus on that because we have to take people with us on the journey. We know that we have to do things on a bigger scale and at a faster pace, but we are also aware that we have to take with us the 18,000 people who live within the park. We also have to involve the 2.1 million visitors that we have each year. How do they get to the park and transport around it? All those sorts of things are key for us.

There are lots of opportunities to try new things within the park. We are working on how to make regional land use partnerships work. Heritage horizons is about trying new things in private finance, for example, and taking them forward. We have an opportunity to use the park and the park

plan to involve people in delivering on both nature and climate. That is at the heart of all our work.

Graham Neville (NatureScot): Thank you for the invitation to give evidence. I am the NatureScot area manager for the northern isles and north Highlands. I bring apologies from our chief executive officer, Francesca Osowska, who is unable to join us because our board is meeting with the minister, Ms Slater.

Our duty as a non-departmental public body is to advise Government on, and deliver the benefits of, nature protection and restoration. We recognise that Scotland's nature is highly damaged, with critical losses still being experienced over relatively short timescales. We recognise that that continued degradation poses a significant challenge to achieving climate stability. Because the link between the nature crisis and the climate emergency is so strong, it makes no sense to tackle those separately. We know that restoring the natural world could contribute as much as 30 per cent of the carbon emissions reductions that are required for Scotland to hit net zero by 2045.

Transforming our use of land and sea is one of the most significant ways that we can address the nature and climate emergency. Rural Scotland and the islands, including the marine and coastal habitats that the previous panel spoke about, have a particularly important role to play. For our rural communities and our farmers, crofters and fishers, investment in nature means opportunities for green jobs and new businesses. Those include tree planting, restoring peatlands, natural flood defence projects and greening settlements.

Those nature-based solutions reduce our emissions, restore nature and provide significant employment opportunities. There are about 200,000 jobs in the nature-based sector, which is roughly equivalent to the number who are employed in the oil and gas sector. Most of those jobs are in rural and island communities. The anticipated growth in jobs that will be required to implement nature-based solutions to the climate emergency will provide a strong basis for a green recovery across Scotland's rural and remote communities and can help us to meet the need for a just transition.

Our overall approach to the economy is one driver of biodiversity loss. We see nature as outside our economy, whereas, in reality, our economic wellbeing sits within nature. Scotland will be a prosperous nation only if it is sustainable in the widest sense, with the biosphere underpinning the economy and society, as explained in the recent Treasury report on the economics of biodiversity by Professor Dasgupta.

Achieving true sustainability will help us navigate a just transition to being a net zero nation, will help us to limit global heating to 1.5°C and will allow us to adapt to the impacts of the level of warming that is already built into the system. We will be more resilient to the changes that are now unavoidable.

At NatureScot, we are prioritising what we can do to have the most impact during our next corporate planning period and towards the 2030 horizon to restore biodiversity and build climate resilience. One way in which we do that directly is by working with communities and economies across Scotland and the islands.

Dr David Signorini (Scottish Forestry): Thank you for the opportunity to talk about the climate and nature emergencies and what Scottish Forestry is doing to tackle them. Since it was fully devolved and created in 2019, Scottish Forestry has been an executive agency of the Scottish Government, with close working relationships to key policy areas such as biodiversity, agriculture and climate change. Those relationships help us to co-ordinate and prioritise our work.

As COP26—the 26th United Nations climate change conference of the parties—highlighted, protecting, restoring and expanding forests is vital to tackling the twin crises. We need action globally, for example through the Glasgow declaration on forests, and locally here in Scotland. As the committee knows, we have ambitious woodland creation targets that rise over the next few years to 18,000 hectares per year.

We also have a statutory commitment under the Forestry and Land Management (Scotland) Act 2018 to promote sustainable forest management that is based on internationally recognised principles and applies to all forests and woodlands, old and new. "Scotland's Forestry Strategy 2019-2029" is a 10-year framework that sets out how we will achieve that. It will ensure that all our forests—the existing ones and the new ones that we are creating now—deliver environmental, economic and social benefits.

Our forests and woodlands cover nearly a fifth of Scotland's land. They are home to some of our most iconic animal and plant species and they contain within them internationally important habitats such as the Atlantic rainforest. They sequester more than 6 million tonnes of carbon dioxide a year and support around 25,000 jobs throughout Scotland, many of them in rural communities. Last but absolutely not least, they provide fantastic green spaces for people to visit and explore, where they can enjoy nature, meet friends and look after their physical and mental health.

In Scottish Forestry, we are working to create more forests, create better forests and get more value of all kinds from those forests. That is what

we are doing to help to tackle the climate and nature emergencies. I look forward to talking more about it over the next hour or so.

Andy Wells (Crown Estate Scotland): Good morning, and thank you for the opportunity to share with you Crown Estate Scotland's role in tackling the twin emergencies.

As many of you know, Crown Estate Scotland's core purpose is investing in property, natural resources and people to generate lasting value for Scotland. Crown Estate Scotland manages the Scottish Crown estate, which includes a range of assets the length and breadth of Scotland. Our work includes the management of the sea bed out to 12 nautical miles, fish farming agreements and cable and pipeline agreements. The foreshore is also included in that, with agreements for moorings and activities in ports and harbours, the rights to offshore energy, which is a key area for Scotland's ambitions to move towards net zero—we play a major role in that—and carbon storage potentially out to 200 nautical miles.

The rural estate is a key part of our activities as well. Forestry and other activities such as agricultural tenancies are a key part of our rural land management. That includes rights to wild salmon and trout fishing.

A key element of our role in the management of the Scottish Crown estate is as an investor, enabler, asset manager and co-ordinator. We do not manage land directly and we are thinking about how we can use those roles more effectively in our activities and our business relationships with our tenants. We are also thinking about how we can enable change in our tenants' businesses and manage our agreements with those tenants to facilitate change.

In our corporate plan, we have key strategic objectives to promote new sustainable ways of using natural resources. That approach has a particular emphasis on the climate and nature emergency, but it also relates to how to involve people—particularly communities—and how the land, coastline and sea bed are managed. It is about those enabling roles that we have, particularly when it comes to working with our tenants. Grant Moir mentioned partnerships, which are key to our work, too. We work not only with other public agencies and our tenants but with communities and third sector bodies. That is where we are focusing our activity on how we address those two issues.

The Convener: Thank you very much. We will now move on to questions from members, for which we have approximately 80 minutes.

I will kick off. How has your role changed as awareness of the climate and the nature emergencies has increased? What changes have been made to your organisations in recent years to enhance your responses to those challenges? Are there any barriers to making those changes?

11:00

Terry A'Hearn: I have seen two main changes. There has been a significant increase in general understanding of the climate and nature crises. Five years ago, if we were to talk to any business or community, there would have been a level of understanding, but that has massively increased. People see it as a core issue. It is no longer a sideline; it is mainstream. That is the first thing.

For an organisation such as SEPA, that means that we have to adjust. I keep talking about the two phases of an EPA's history. In the first phase, we dealt mainly with the environmental managers in businesses. In the second phase, we are in the boardrooms and executive rooms of corporate entities and, for farming communities, NFU Scotland has serious discussions about those types of issue.

As I said, we as an organisation have to adjust to taking a systemic approach. No one can decarbonise or tackle the nature crisis on their own. Any community, whether rural or urban, can decarbonise by a certain amount. People can just use less energy in their home, on their farm or in their business. However, without the provision of renewable energy, that will make only a certain difference.

A regulator needs to be prepared to say, "Okay, you're trying to innovate." Increasingly, we find that people in communities are trying to innovate in order to tackle the combined climate and nature crises. We have to adjust. A regulator tends to say, "Here are the rules—stick to them," and so mitigate risk. However, the biggest risk is not having a go at big change and innovation.

When we go to any community and say that these combined crises are huge, people get it. If they want to innovate and try something different on a farm or in the local town and we say, "No; that's too risky—that might not work," that will not help people in Scotland. I am not saying that we should be cavalier—there are laws that people need to stick to—but we need to have more of a risk appetite. We need to get communities and businesses together and ask what innovations will turn round the decline of species and habitats and help us decarbonise, and then work out ways of supporting that innovation, with the right safety net and risk mitigation.

That will move us on from the changes that we are seeing. I would not necessarily describe that as a barrier, but we will become a barrier if we do not rise to that challenge.

Graham Neville: Like Terry A'Hearn, we have seen a huge increase in awareness and understanding of the issue and, in particular, from our perspective, awareness of the role of nature as a solution to the climate emergency. In the run-up to and during COP26, there was an increase in focus on nature-based solutions and in the hits in terms of the awareness of the role of nature in providing a solution in carbon mitigation and sequestration and providing biodiversity benefits. We are having very encouraging conversations across Scotland and internationally about how we can provide a significant part of the answer in Scotland's journey to net zero.

There are issues around the scope for collaboration. As Terry said, we must have bigger projects with more communities and stakeholders. Truly multistakeholder partnerships on a landscape scale, for example, are a key way of achieving a significant increase from the 3 per cent reduction in climate emissions that we have achieved to date through the more traditional route, to the 9 per cent that we are going to need. That reflects the change in the scale of the work that we need.

Dr Signorini: I have two points to make on that question. The increasing public awareness of the crises and emergencies has clearly led to an increase in interest in tree planting. We see a need to take that conversation and those good intentions further by saying that, although tree planting is positive, it really needs to be about woodland creation and having the right tree in the right place for the right reasons. There is huge public support for tree planting and awareness of its benefits, and we are trying to take that forward into woodland creation and the longer-term development and management of those woodlands.

My second point is that one big change that I have seen in forestry is structural change, from the completion of devolution of forestry and the creation of the agencies Scottish Forestry and Forestry and Land Scotland to the Forestry and Land Management (Scotland) Act 2018, which gave the Scottish Parliament a chance to influence how forestry is regulated and managed in Scotland and to integrate that more closely with the other regulatory agencies such as SEPA and NatureScot.

The Convener: How do you get the balance? Most people accept that an increase in forestation will help us get to net zero, but where do we find the balance between a potential monoculture of Sitka spruce and having the right tree in the right place? What work is being done to ensure that that is not just a phrase that people like to throw about so that we actually see the best trees for carbon sequestration and biodiversity being planted, and so that we do not consider only the commercial arguments for planting as many Sitka spruce as possible? That question is for David Signorini and then Graham Neville.

Dr Signorini: The latter approach characterises how forestry was done in the 1980s and 1990s. For at least the past 10 years, we have had in place the UK forestry standard, which sets out the requirements for woodland creation. Productive forests will have a majority of productive species such as Sitka spruce, but they are limited to a maximum of 75 per cent of one species. They are required to take into account a range of other outcomes such as biodiversity, public access and climate change. The modern forests that are being designed and planted now are not monocultures. They might be there primarily for productive timber or they might have more native planting for greater levels of biodiversity. However, you are absolutely right to ask about balance. We are always thinking about the balance between the economic, environmental and social outcomes of all the applications that come to us.

The Convener: Graham, do you think that the balance is right with regard to the UK forestry standard and Scottish Forestry's ambitions? Do they conflict with NatureScot's main objective of protecting biodiversity? Are they getting it right?

Graham Neville: I do not think that there is a conflict at the policy level. We have had very few issues that are not resolvable through dialogue between Scottish Forestry and ourselves at a local level. The outcome is always based on the best decision for the landscape or particular forest.

The irony of my giving evidence is that I have spent much of the past couple of years of my career removing trees from the flow country to enhance peatland restoration, so perhaps I am not the best person to comment on this. However, there absolutely are good examples of where we have moved from monoculture Sitka plantation to native woodlands and riparian planting, which has biodiversity and economic benefits, and provides nature-based solutions even for fishery industries such as trout fishing. I think that the correct policies are in place at national level, and we work closely with our Scottish Forestry colleagues to help implement them.

Mercedes Villalba: I have a question for Terry A'Hearn on the role of public bodies in tackling the climate and nature emergencies. A coalition of wildlife campaigners highlighted a 40 per cent reduction in funding for Scotland's public environmental bodies, including SEPA, between 2010 and 2019. How have those cuts impacted on SEPA's ability to respond to the climate and nature emergencies, and what impact have they had on staffing and SEPA's capability to undertake investigations and enforce actions?

Terry A'Hearn: I have seen that submission, which is about overall funding to the public bodies that you have referred to. With SEPA, the funding that we get is the funding that we get, and we have focused on the business model change—in other words, the move from operating in a phase 1 way to operating in a phase 2 way, which is a point that I keep coming back to. For example, if, instead of inspecting lots of small operators, you do a number of inspections and get enforcement results that you then publicise widely through the sector, you are likely to get a more significant increase in compliance than you might have with the previous approach. I guess that we are setting out to put in place a different way of working that enables us, with the resources that we get, to do our job with regard to compliance and enforcement.

For the first time ever, we have set up a dedicated enforcement team. Previously, we had what you might call jacks of all trades: people would write the licences, do the inspections and carry out the enforcement. That still exists, to some extent, but, even with fewer resources, you can get better returns with dedicated specialists. For example, once in every three, four or five years, someone might have to write a prosecution brief, which would be our highest level of enforcement. It would take them a long time, they might not get it right and the Crown Office and Procurator Fiscal Service might reject it as not being good enough. That is just to be expected with that sort of model. Now, with the dedicated team, we think that we can be more effective in enforcement with the resources that we have. Indeed, we saw that last week when we had a very successful prosecution for waste transfers. As I always say, whatever resources we get will be deployed for maximum benefit, and with the resources that we are getting, we are confident that we can do not just the same job that we used to do but an even stronger and better job in everything from supporting innovation to taking enforcement action when we need to.

We think that this is happening at a natural point in time. In other words, even if it had not happened because of the resources issue, we would have made this change anyway. When people were not thinking much about the environment and the only influence on them came from the regulator, it was right to use the phase 1 approach. Indeed, Scotland's environment is better than it would have been without it, as are all the other places with an EPA. However, when faced with more systemic challenges and when, for example, banks are putting in place environment conditions when lending to the businesses that we regulate, you cannot keep using the old high-resource approach that might have been effective previously. Instead, you need to think about how you redirect resources to suit the environment—for want of a better word—in which you are operating.

The Convener: Ariane Burgess has questions about priorities and on-going work programmes.

Ariane Burgess: Witnesses in the previous panel said that there needs to be a joined-up approach across all agencies to tackle climate mitigation and adaptation and biodiversity issues simultaneously. Terry A'Hearn has just talked about SEPA's more systems-based approach, but are the organisations represented by the panel endeavouring to work together in a joined-up way? If so, could you provide some examples? Secondly, what can the Parliament do to help you to support rural sectors in responding to the climate and nature emergencies?

I am spoiled for choice, but perhaps we can start with Grant Moir, as we have not heard from him for a while.

11:15

Grant Moir: Partnership working is at the core of what the Cairngorms National Park Authority does. I can give you some examples of how we are working with other organisations that are on this call.

We are working with Crown Estate Scotland to look at the future of the Glenlivet estate, which is Crown Estate land within the Cairngorms national park. We are working with Moray Council, Highlands and Islands Enterprise, the Crown Estate, local communities and others to look at the long-term management of the estate and how that will work for the climate, nature, the economy and planning. That is one example.

We work closely with Scottish Forestry on creating woodland in the national park. That links back to some of what David Signorini said. The draft park plan contains a target of creating 35,000 hectares of new woodland by 2045. That would take the national park from 17 per cent to about 23 per cent of tree cover. We are working closely with the Scottish Forestry team to create about 1,000 hectares of woodland in the park per annum. We run a woodland challenge fund scheme that gives people grants to do some of the preparatory work on the ground before Scottish Forestry comes in.

There are lots of examples of the organisations working together. The park plan binds that all together. It connects all the aspects of how we deal with issues from transport, planning, housing and public health all the way to some of the nature-based solutions that we have heard about already. There is a whole-system approach. The park plan document sets out where we are going and how everything links together. That works well, and all public bodies within the national park

must have regard to the plan. It is a key instrument in ensuring that everything fits together. There are good examples of how those partnerships work within the park and will help us to deliver at pace and skill in the future.

Ariane Burgess: Would anyone else like to talk about joined-up approaches across organisations?

Andy Wells: I said at the beginning that the Crown Estate sees partnership working as key to what we do, and we have a range of examples. We are building up our team's capacity for partnership working. We have a partnership manager and have recently employed new engagement managers in the Highlands and Islands and in Moray.

Grant Moir mentioned our work with the national park on Glenlivet. We have worked on a number of other projects. We have a knowledge exchange partnership with the Moredun Research Institute to look at how we can build up understanding and awareness of livestock management, disease control and carbon mitigation among our farming communities and agricultural tenants. We are working directly with the private sector and research institutes.

We have previously worked on trialling the natural capital protocol in partnership with SEPA and with NatureScot to look at how the protocol can be adapted to work at an estate or farm level. Those trials are informing our approach to how mitigating and adapting to the twin crises can be tackled by farm businesses, whether they be livestock, dairy or arable. We have trialled all three.

We have done work on our new challenge funds. Those are capital investment funds because we have an investment role. We are looking at where we can invest in partnerships with projects around Scotland. We launched a boat-based tourism one earlier this year. We have also launched a partnership fund that works directly with communities and our tenants. We will launch our innovation with natural resources capital fund in the new year. There are lots of examples of our working in partnership with bodies represented around this table and with third sector bodies and communities.

Ariane Burgess: Does anyone else want to come in? In the interests of time, perhaps it could be highlights.

Terry A'Hearn: Our best partnership is probably in the Leven catchment, where there are 16 signatories to a sustainable growth agreement including public bodies such as NatureScot, Scottish Water, Scottish Enterprise and Fife Council, as well as private businesses and non-governmental organisations.

The question was about what the Parliament can do to provide help and support. That is our most promising partnership. Money is flowing in and people are investing in regenerating that part of Scotland. It is harder to work in that way because it is riskier and more challenging, but it is more rewarding for the community. If the Parliament could support agencies in taking the risks to genuinely work in partnership with communities, the third sector, businesses and each other, and not just have bits of paper saying that they are doing that, it would be a big help.

Dr Signorini: I agree with everybody else. It is not possible for us to work in isolation. It is essential that we work in partnership. I will give some examples. At a project or case level, when there are new applications for afforestation or large-scale fellings, we consult very formally a set of statutory consultees including NatureScot, Historic Environment Scotland and SEPA. However, as Graham described, we also convene a regular group at the national policy level that talks not just about individual cases but about how we are working in partnership more generally.

Grant Moir talked about our work with the national park. The other example I will give is the Clyde climate forest, which is an initiative among the eight local authorities in the Glasgow city region to increase levels of tree cover in the urban environment and increase forest cover more generally. That is perhaps a less traditional form of collaboration, but it is another example of partnership working.

Ariane Burgess: It is good to hear that innovation is happening.

This question is for Terry A'Hearn. Echoing the findings of the Rural Economy and Connectivity and Environment, Climate Change and Land Reform Committees in the previous session, the Government's shared policy programme states that

"the status quo of aquaculture regulation is not an option"

and includes a commitment to

"reform the regulatory and planning framework".

That has started with the independent review from Professor Griggs, and we are waiting for the first piece of that.

Since SEPA's responsibilities include managing the environmental impact of fish farms, I would appreciate hearing about your engagement with the review, whether you believe that it will catalyse the regulatory reform that is desperately needed and what else is being or should be done to minimise the impact of fish pollution on the environment and reduce the considerable animal welfare harms across the industry.

Terry A'Hearn: Over the past three or four years, we have made a number of changes to the way in which we regulate the salmon industry. We have tightened compliance requirements and have changed and increased monitoring requirements on the businesses, modernising those that had been best practice at the time but were out of date. We have also changed the way that we monitor and inspect. For example, we have increased the number of unannounced inspections. It has been challenging during the pandemic, because making our boats Covid secure is even more difficult than making an office Covid secure, but we have tried to find ways to do that.

As I keep saying, we have made changes to the way in which we operate. Each fish farm company will have a number of fish farms and we still have individual site licences, but we have assigned a person to co-ordinate all our interactions company by company. That means that, if the companies say, "We want to close three sites, because they're in more sensitive waters, and have one bigger site elsewhere under the change arrangements," we have a more nimble way of working out how to facilitate that and seeing whether it can be allowed.

For the first time ever, we have also created a multi-stakeholder advisory committee. As I understand it, that sort of thing has not happened in Scotland before. It is concerned only with our responsibilities, but it brings to the table the Coastal Communities Network, Scottish Environment LINK, the trade association for fish farmers and a couple of those companies, the local authorities, NatureScot and others. I would not say that it is the easiest meeting that I chair every quarter, given how disparate and polarised the views are, but in its hearings that committee has heard very strong views about fish farming from many parties. As the regulator, we have said, "We regulate a couple of the key things that you have referred to. We will get these people around a table and get their advice on how we should regulate our particular responsibilities." Instead of having a fight with fish farm after fish farm, we get them to come in, we have a lively discussion and then we try to work out what to do.

What has emerged from that are questions such as whether, with Marine Scotland and others, we can develop a map for the west coast that allows us to say, "Don't even think about putting fish farms here, here or here" and which shows where a fish farm might be viable or more viable in certain circumstances or with certain technology. With such a map, we could get everyone's input so that we could take a more systemic approach.

I met Professor Griggs as part of his inquiry; we have made a written submission, and we await the outcome. When we met, I put my views to him about what we are doing and what could help, and we have put in some written thoughts, but I do not know what his report will find.

The Convener: On the topic of enforcement, it has been suggested that SEPA has gone a bit soft and that it has lost its teeth. I am thinking, for example, of the flaring at Grangemouth. I know that there is an argument for taking a carrot-and-stick approach, but when we hear that leakages of sewage from Scotland's water system have risen by 40 per cent, I have to wonder whether you have lost your stick and whether there is too much working with companies and not enough enforcement. Is that a valid claim that could be laid at your door, Terry?

Terry A'Hearn: For the first time ever, we have a dedicated enforcement unit, and we saw its value when we had a major prosecution. We stopped a company sending appalling waste to China. We made its ships turn around and come back, and we prosecuted the company in court.

As for the flaring, we have referred ExxonMobil for prosecution and have required it to spend £140 million in order to stop it. It has already put in new elevated tips and, by the end of next year, it will have put in ground flare tips. As far as I am concerned, regulating properly means being supportive and helpful to those who do the right thing when they want to innovate and improve the environment, their profitability and their value to the community and kicking those who want to do the wrong thing hard. I want to kick those people harder than we have in the past.

The Convener: That answer was quite clear. I call Rachael Hamilton, who will be followed by Karen Adam.

Rachael Hamilton: On that point, I note that in a report to board members in February, Mr A'Hearn said that there might be a risk of not protecting the Scottish environment, especially from key threats. Do you have a revised overspend, and a timescale for dealing with the impact of the cyberattack, particularly with regard to the environment?

Terry A'Hearn: We are confident that, since the cyberattack, we have done our highest priority work. The situation has been incredibly difficult. I do not think that you can understand what a cyberattack is like until you have been through one, and things have been incredibly challenging for our staff. I give them great credit, and I also give great credit to a number of organisations that have helped us. Indeed, a lot of businesses that we regulate have been very good at helping us work out how to get them to comply.

Looking at what we have done over the year, I would point out that we have never once failed to

put out a flood warning or alert. That is actually quite critical, because in the worst cases it is actually a life-and-death matter.

We have also made more than 5,000 authorisation decisions for businesses. That has been difficult but the situation is improving the way that we do that work because we have found new and better ways to do it, which we identified not only from the cyberattack but as a result of the pandemic.

During the pandemic, like most organisations, we had to restrict people going out into the field. We do not have much restriction on fieldwork now, as the evidence has come in that outdoor transmission of the virus is not high. However, we identified the sites that were of highest risk to the environment and prioritised attending them. I will not go into all the statistics that we have on what we have done this year, but we are confident that we have addressed the highest-priority environmental risks.

11:30

My aim is that, by the end of the next financial year, we will be not only fully back up and running but much more advanced. We had a four or five-year reform programme. By the end of the next financial year, we will have fast-tracked that and put all the key elements in place.

As we do that, we are also delivering. Therefore, I am confident that there are no existing risks to the environment that we cannot deal with. We are still using some workarounds. We decided not to rebuild our old information technology systems because we wanted to replace them anyway. We did not want the opportunity that cybercriminals provided to do it under pressure, but we are building a completely new system.

For example, three of our mass transaction authorisations have now been made digital. Instead of a whole lot of paper going back and forward, three types of transaction are at the leading edge of digital service provision. That means that all those decisions get made more quickly and, with the saved staff time, we can get out and deal with the environmental risks.

In our business plan for next year, we will lay out the progress that we will make. I assure the committee that we have found ways to deal with the highest environmental risks and will continue to find improved ways of dealing with them as we build to the new future.

Rachael Hamilton: Will you clarify whether you can receive, verify and determine any application for industrial pollution and waste management permits?

Terry A'Hearn: Initially, that was difficult but there is only one small category in which we still find it a little bit challenging. We are working with the operators case by case. For a number of months, we have been able to determine any application that comes in.

Rachael Hamilton: Are the witnesses confident that rural communities have a voice and are clear about the objectives and targets—particularly those that relate to climate change—that the Scottish Government sets and you deliver as public agencies? What do you do to engage with and consult rural communities?

Dr Signorini: One of the requirements of the UK forestry standard is that, when someone applies to create a new forest through the forestry grant scheme, they must have done some engagement with the local community and the neighbouring landowners in advance of the application coming through. We expect to see evidence of that. When the application comes in, it will be put on our public register for at least 28 days so that the local community and interested stakeholders have another chance to feed in their comments on it.

It is almost a two-stage process for us: there is a less formal process of consultation through the UK forestry standard and then there is the second, formal aspect. That gives local communities a voice on individual schemes.

Rachael Hamilton: Is it a bit like a planning process that local communities can feed back into? You said that there is a public register. Do you keep track of how many complaints there are? Scanning the feeling about forestry plantations at the moment, I noted that a resident from Lochmaben said:

> "wildlife is being decimated because of commercial planting"

and that forestry is destroying upland ground.

There is quite strong public feeling. Are you content with the engagement, considering that there are such headlines?

Dr Signorini: There are examples of good public engagement and there are examples of less good public engagement. We always encourage and remind applicants of the benefits of good community engagement. In the pre-application phase, when the new forests are being designed, community engagement and local conversations can help improve the design.

As I said, one aspect of the UK forestry standard is based on public amenity and public access. We have examples of schemes where the local community has been involved during the design phase and where the less-productive elements of the woodland have been used to

create what is, in essence, a new community resource. I come back to my point that there are some good examples, and some examples where community engagement has perhaps not been as good as it could have been.

Andy Wells: Collaboration and consultation with communities are key to a lot of our work. As I mentioned, a key part of our corporate plan is engaging communities and tenants in decision making in relation to our activities. I will cite some examples from our corporate plan. We are still a relatively new body. We were established in 2017, and the Scottish Crown Estate Act 2019 came into force only in 2019. Our first corporate plan was extensively consulted on and included a lot of responses from the communities around Scotland that we deal with.

We directly engage with our agricultural tenants through a representative working group, which has elected representatives from all four of our rural estates. We meet them regularly and discuss a range of topics in relation to what is going on in rural estate management.

Some committee members may be aware that we have local management pilots around Scotland in advance of the implementation of the parts of the act on transfer and delegation, in order to look at community and local authority involvement in the management of the Scottish Crown estate. We have a pilot agreement in place with a number of bodies, including Orkney Islands Council and the Forth District Salmon Fishery Board.

We also have regular consultation events in relation to things such as the long-term forest plans at Glenlivet. The masterplanning project that Grant Moir and I have mentioned will also involve community consultation as a key element in looking at an ecological land use and built development masterplan for the Glenlivet estate.

We are focused on engagement. Certainly, when it comes to our investment role and the challenge funds, for example, we are looking at working closely and in partnership with communities that come forward with project development trusts and so on within that funding stream.

Graham Neville: Rachael Hamilton asked a very good question. It cuts to the heart of the just transition, in which community involvement and engagement are key. NatureScot and predecessor organisations have a long history of transactional engagement and consultation, particularly in relation to our statutory role in designated sites and protected areas, our species and habitat management schemes and joint delivery of the agri-enviroment climate scheme.

There is an exciting opportunity. What we are seeing more and more is the move towards co-creating a vision at the landscape scale. What does a net-zero landscape look like? What does a nature-rich landscape look like? How can we get to that? We can do that only through full, true and joined-up collaboration with stakeholders and communities.

Interestingly, that might not necessarily mean involving the same groups or having the same solutions in the same place. There will be spatial differences, as has been borne out by some of the landscape scale pilots. I mentioned the flow country earlier, but there is also the Tweed Forum, Cairngorms Connect and a whole range of other pilots in which a larger group of stakeholders can come together and set the vision.

It is important to point out that the rural sector is absolutely key to that work. As our farmers and crofters are the solution to the nature and climate crises, we can achieve true sustainability and net zero only by working and co-creating with them and bringing them with us.

Grant Moir: There are what you might call consultation versus dialogue things happening. You will always get formal consultations; for instance, our national park plan is out for consultation at the moment, and we have received more than 700 responses to it so far, which is great. In the past week, we have had online events with farms, businesses and communities in the park, and we have regular residents meetings on visitor management issues in the park. Strangely, because a lot of these things have had to go online as a result of the pandemic, we are getting more people and more representation more easily than we did with the old format of physical meetings in village halls. Dialogue has increased quite a bit in that respect.

Behind all that is the work that we have been doing with community development trusts across the park over the past 15 years. They all have community action plans, and we work with them to try to make them happen. We also support community development officers in the park through, for example, Voluntary Action in Badenoch & Strathspey or the Tomintoul & Glenlivet Development Trust.

Dialogue is absolutely necessary, but you also need the surrounding infrastructure to make the things that people want to happen start to happen. There is no point talking to and consulting people and then ignoring what they say. It is all about listening and having a dialogue rather than the traditional consultation process, and in tackling the big issues that lie in front of us—and which we know we have to deal with quite quickly—the whole question of how we take people with us will be critical. It will mean lots and lots of conversations and dialogue to find the right way forward together.

Karen Adam: I had a few questions, but many of them have been answered. As a result, I want to raise a bit of a topical issue. Something that is front and centre in my mind and which is really affecting my constituency is storm Arwen. We have talked quite a bit about collaborative working, but many issues affecting Scotland, and my constituency in particular, are due to climate change. We have had issues with migrating cod, for example, and urban gulls; now this devastating storm has happened, and we are hearing such extreme weather will happen much more often.

As I was driving down to Edinburgh, I kept seeing bare trees, many of which were lying on the roads. It was actually quite perilous. Aside from the devastating consequences for residents, I also wonder what is going to happen to all the birds. We have heard about collaborative working, but what role do you see yourselves playing in resilience preparation and support with regard to third sector organisations and private businesses? What might that look like?

The Convener: That might be a good question for Graham Neville to start with.

Graham Neville: The question is very pertinent, given the weekend's events.

There are a couple of points to make, the first of which is that, unfortunately, we will see more of these high-magnitude storm events, so we will need to be more resilient to deal with them.

We need nature-based answers in order to build our ecosystems into being more resilient places—to restore them, so that they can withstand, and be more resilient to, those high-magnitude events. You are absolutely right in saying that there is also a human impact.

11:45

Adaptation planning is involved. A number of spatial adaptation plans are coming through in Scotland. The adaptation plan for Glasgow and the Clyde river valley was the first that I am aware of, and we are starting to think of such plans in the Outer Hebrides and in Orkney.

We are going to have to find a way both of being resilient to and mitigating the physical impacts of climate change, and of adapting to them. One encouraging outcome from COP26 is the understanding of nature-based solutions and of the fact that we have to do soft engineering and natural flood risk management—for example, peatland restoration in the uplands, and more riparian planting, which slows down the big, fast-spating flood events. Those all need to be implemented.

The second challenge is how we fund that. It is not going to be deliverable just through the existing NatureScot budget. We must move to a model of blended public-private finance, in order to deliver nature-based solutions at scale. We have a few pilot projects in some landscapes; we are talking to investors about quite significant elements of either peatland restoration or natural flood risk management. That is a key role that NatureScot can play in various landscapes. It has to be driven by a risk assessment of the impacts that we can predict for each particular area.

Dr Signorini: It is a really important question, because it goes to something that we are thinking about very carefully in forestry. A lot of the expansion in and drive towards more forestry is driven by climate change; however, we need to think about what that climate change means for Scotland's forests.

We are still assessing the full impact of the storm. Obviously, the focus at the moment is on people and property, but there will have been an impact on forests in the north-east, the Borders and other places.

This is part of a broader conversation that we are leading and promoting within the forestry sector. We are designing and planting new forests, but we need to make sure that they are as resilient as they can be. What happens when it is drier or wetter than it has been in the past—what happens when climatic conditions are different?

We are leading, on behalf of the UK, a review of the UK forestry standard. One aspect of that involves building in greater consideration of forest resilience and what we can do at the design and planning stages to mitigate some of the risks.

The Convener: Thank you. We move to questions from Jim Fairlie.

Jim Fairlie: Sorry, convener—I thought that other members of the panel were going to come in.

I want to touch on the farming community. My question is probably to all four witnesses, who will be aware of the tensions between forestry and farming. I constantly hear that it is either forestry or farming, but not both. A lot of the questions that are put to me are about the science behind the carbon storage of forestry as opposed to naturally grazed land. The buying power of forestry is pushing the price of hill land up beyond its current levels, which makes it absolutely unbuyable for farming. What work has been done by the forestry industry to get to grips with the integration of farming and forestry, so that the two things can work together and cohabit?

Is it true that Forestry Scotland is enabling greenwashing in Scotland? Is it the case that when private investors come in, we lose the value of that natural capital in Scotland?

This question is probably just for David Signorini. Are you able to help farmers who want to plant orchards? Although I know that it is outwith the scope of the current forestry plan, is there a way for you to bring in orchards so that farmers can grow trees and still get a crop out of the land and can potentially graze it as well?

I know that there is a lot in there, but that is a constant theme that comes back to me in the farming community in which I live.

Dr Signorini: It is a constant conversation for me, too. I was in a meeting with the NFUS yesterday, talking about exactly this issue. We always stress that farming and forestry can work together. We are doing a lot of work with the farming community and rural communities about integrating trees on their land, which is being pretty well received. In relation to the ideas of shelter belts and riparian woodland, we have a growing demonstration network of farms that have converted some of their perhaps less productive land to forestry for its benefits to livestock, flood management and the longer-term financial prospects of the business.

More than half the applications that we receive for woodland creation through the forestry grant scheme are for less than 20 hectares and predominantly for smaller parts of existing farms and land-based enterprises. I think that we are doing quite well in integrating farming and forestry.

The issue about larger holdings and estate transfers that come forward for afforestation is a constant theme. We are trying to quantify the scale of that issue. The Scottish Land Commission is doing research about the volume of those transactions, which I hope it will report on in the new year. There tend to be a few high-profile, totemic ones, but we want to get a handle on the scale of that transfer.

Again, I go back to our statistics about what the forestry grant scheme is doing. According to the James Hutton Institute classification, three quarters of the land that has been afforested in the lifetime of the scheme over the past six or seven years is class 5.2 or worse. It is therefore very much the rough grazing land—the poor-quality upland grazing.

We are discussing with the NFUS how, when farmers get to the point that they are thinking about selling the whole enterprise, we can offer them other options so that perhaps some of the land is afforested while the better-quality land remains in farming. That is an extension of work on the integrating trees and farms. It is about how we give existing land managers and farmers more options for diversification and more opportunities to benefit from woodland creation.

The Convener: You talked about poor-quality grazing and uplands. Is that poor quality in terms of agricultural production or carbon sequestration? You quoted something from the James Hutton Institute. Rob Brooker said at a previous meeting that there is a need for more online systems to gather data to better help farmers, and I am sure that that applies to foresters as well. When you talk about low quality, does that relate just to agricultural output or, given the climate emergency, do you consider the best use of land in terms of carbon sequestration in the long term?

Dr Signorini: The answer to that is complicated and long. The science about carbon sequestration on different kinds of land and different uses of that land is constantly changing and improving. My point was that the James Hutton classification is a broad classification of land across all Scotland. We can overlay that on our forestry grant scheme to get an idea of the kind of land involved. However, on any particular scheme, broad classifications do not really answer the questions that we need to answer, which is why we take things case by case.

The Convener: Thank you. I ask Grant Moir to answer those questions.

Grant Moir: One thing that needs to be considered is that the work on carbon in relation to grassland management, woodland management and peatland restoration is changing. Good stuff is coming through, but there is always more that we can learn.

In Scotland, we are not as good at the integration of woodland and farming as we could be. There are good examples of integration. In Europe, there are lots of places where farming and woodland are very much integrated, which include places with much higher woodland cover than Scotland has.

We cannot look at trees from just a carbon point of view. There is a carbon element to woodlands but, as we heard earlier, there is also a flood management aspect and there are biodiversity benefits. However, we should also not be thinking about planting up whole areas of inby land.

There is a balance to be struck. We have to try to get the best evidence possible out and not just talk about putting the right tree in the right place but make that happen. I hope that some of the work that we are doing in the Cairngorms can help to point towards that.

Another aspect is the changes to the rural payments system. We need to think about how we do more to set out the integration of agriculture and woodlands in those rural payments to make it easier for people to do that work on the run.

Jim Fairlie: I echo what you just said, Grant. There must be far more integration and the farming community must be taken along with that project.

At the moment, there are undoubtedly real tensions. I keep being sent articles that say that grazed land will sequestrate as much carbon as forestry or that trees will do more damage and it takes 25 years to get it back, for example. However, you are right that there is far more to the matter than carbon sequestration. What you and David Signorini said gives me some comfort that you will start to consider the matter much more holistically so that the farming community is part of the process, as opposed to it being a case of forestry against farming.

I asked David Signorini whether Scottish Forestry is able to allow farmers to plant orchards, which are far more open, on their farms. I know that it is not workable with the current system, but does Scottish Forestry have the power to integrate such planting on farms? We talk about regenerative farming and one of the things that we are supposed to be doing is ensuring that we have good woodland. We cannot just put it to the side and leave it as done. If there is an opportunity to be able to graze in between it and get another crop off it, that must surely be beneficial for a regenerative farming system.

12:00

Dr Signorini: I am sorry—I forgot to answer the question about orchards in my previous response. You are right. At the moment, what you describe as the division between forestry and farming is manifested in the forestry grant scheme and agricultural support schemes. Orchards fall into the middle of that. Traditional foresters will tell you that orchards are not forests and traditional farmers will tell you that orchards are not farms.

That takes us back to where we started, which is that there are opportunities in the work to redesign and reinvigorate agricultural subsidies. We are part of that broader policy development and conversation and are looking for opportunities and ways to support the kind of agroforestry that is less dense than a forest but still has trees on the farmland. There is integration and it is not seen as a binary choice for landowners.

Jim Fairlie: Sorry, David—I am giving you a grilling here. How do you answer the accusation that Scottish Forestry is allowing private investors to greenwash the businesses that they run when they are not changing them?

Dr Signorini: Scottish Forestry is not facilitating the sale of land for afforestation. We offer support to people who want to increase forest cover on the land. We are responsible for the woodland carbon code, which is a scheme that allows people to generate and benefit from accredited carbon credits. That is a regulated scheme that has a whole set of conditions and regulatory activities associated with it.

We agree with the Scottish Government's position, which is that offsetting and the use of carbon credits should only be part of a clear plan and a clear journey towards net zero. Carbon credits can be used, but only as part of an overall decarbonisation plan.

The Convener: We will be looking at funding and so on in next week's session, so some of those topics will come up again.

Graham Neville: I want to come back to the point about agroforestry to highlight the work that we have been doing in our natural capital pilot programme, which is testing some of the solutions around, as Dr Signorini said, how we get farms to have more woodlands, hedgerows, silvoarable systems and silvopastoral systems, which would allow new native woodland expansion and natural woodland creation.

We are part—as is Scottish Forestry—of the national test programme that will be launched next year to help farmers to make those choices on a farm-by-farm basis with an understanding of the natural capital and the potential of what they can do on their land to improve biodiversity outcomes in single-farm areas. There is a lot of hope for progress in that area, but it involves gathering better evidence, which we are trying to do at the moment, as well as delivering that knowledge to farmers.

Carbon markets are also being seen in relation to peatland areas. That is a fast-paced and newly emerging area. It is important to ensure that communities continue to retain some of the benefits from that.

Jim Fairlie: You mentioned hedgerows. Do you include hedgerows in the baseline carbon audit of a farm?

Graham Neville: We are piloting an outcomes-based approach. It is a farm-based audit. I think that hedgerows are included, but I can confirm that for the committee in follow-up.

The Convener: Thank you. Andy Wells, the Crown estate has forestry and estates, so you are a land manager. Will you pick up on some of Jim Fairlie's points with that in mind and also touch on the foreshore? The committee has heard about blue carbon in a lot of our evidence sessions. In a previous session, we had an expert on foreshores and blue carbon from places such as wetlands, who did not think that there was a role for Crown Estate Scotland. Will you comment on that?

Andy Wells: I have a couple of points to add to the discussion on forestry. It is a live issue and it has come up very much in discussion with our tenant group, in particular, so I will focus on the tenancy sector. Some of our tenants come forward with extensive planting schemes and are looking to diversify their activities, but other tenants within the group are concerned about the scale of change. We already have highly integrated forestry and farming landscapes, particularly at Glenlivet because of the history there. All those issues are certainly being played out.

Crown Estate Scotland is keen to work with our tenants to facilitate new planting at different scales, which could be small-scale hedgerows or, potentially, larger-scale woodlands. That has raised a number of issues, particularly in relation to how it can be done within the agricultural tenancy and the legislative framework around that. We have been working with a number of bodies, including the Scottish Tenant Farmers Association, the Woodland Trust and the Scottish Land Commission, and with our lawyers to look at some of the barriers that are impacting on tenants who want to plant trees. There are some solutions, but there are difficulties associated with how it is treated in the agricultural lease, particularly if it is a large-scale woodland.

We do not have all the answers yet, but we are working on it. We are looking particularly at collaborating with the Scottish Land Commission on one potential solution, which is to take the land out of the lease and come up with a separate contract with the tenant to allow them to plant woodland. That would get around some of the difficulties associated with how rent is calculated, the liabilities for managing the woodland, how carbon payments may be accommodated, and any waygoing valuations, which is another aspect of the lease that can create issues. A number of things still act as a barrier to farmers who want to plant trees, and there is the whole question around consultation and engagement with other people in relation to the scale of woodland in particular locations.

I am probably not the best person in the organisation to comment on the foreshore element. I go back to our key role as an enabler and investor—an asset manager. On the investment side, we make capital funds available for investment in land and property, which are activities that might facilitate carbon sequestration on the foreshore. On seaweed, I am again not the best person to comment, but other people in the organisation could provide details about our approach to that element of carbon sequestration. We recognise that there is a lot of opportunity for sequestration in marine environments. Crown Estate Scotland has provided other revenue funding to support early-stage projects or facilitate research in that space. I am not the best person to answer that question, but I will refer to other colleagues and come back to the committee on that point.

The Convener: That would be appreciated. We move on to the theme of data collection and monitoring.

Jenni Minto: Two weeks ago, we took evidence from scientists on the climate and nature emergencies. They raised a number of points in relation to gaps in data collection and suggested that land managers, farmers, crofters and fishers could provide that information. I would be interested to know what your bodies do with local wisdom and evidence that is captured by people within communities.

Moreover, following on from Graham Neville's point about blended public and private funding, I note that two scientists, one of whom was Dr Tara Marshall, told us that, when industries are decommissioning or changing things, they capture a lot of data that could be used more widely. Do we need to ensure wider access to such data to let us move forward in tackling the climate and nature emergencies?

There are two sides to my question: the local gathering of data and the data gathered by corporations.

Grant Moir: Data will become ever more crucial over the next 10 years, and we want to ensure that we have the right baseline from which to measure things. As I have said, we have just done the baseline for the carbon audit for the whole national park, and that should give us some really good data on where we are on that side of things.

Something else that we are kicking on with but that has a slightly longer timescale is the Cairngorms nature index, which could be really interesting. It is based on the Norwegian nature index, and we have been working closely with people from Norway on it. In effect, it gives you an ecosystem health index for the park; you look at river or woodland systems to see how healthy they are and then look at what can be done to increase that health. That will require doing all the work that needs to be done with regard to the climate and nature crises.

We have a lot of citizen science in the park—that is very much encouraged in the Cairngorms nature partnership. We need to ensure that we get a lot of data. After all, a huge amount of the data on the park is collected by volunteers, and the data is then entered into the various national data management systems, such as those used by the National Biodiversity Network and the North East Scotland Biological Records Centre. Land managers and so on also collect information, which we use in the good conversations that we

have with them about, for example, our moorland work in the national park. Data is crucial in that respect.

I am perhaps less well placed to talk about corporations, so I will leave that for someone else. We are becoming more and more data rich—that is, we know more and more—but we need to do more with the data and to try to understand it. Collectively, across the public sector, we need to spend more time working on that area, because I suspect that none of us is big enough to do that individually. For us, as a partnership of public bodies—and going wider than that to include, say, non-governmental organisations—the key issue is to look at the data collectively, work out what it is telling us and then make the right decisions on that basis.

Jenni Minto: It is interesting that you mention Norway. Are you learning anything from the national parks in America? I believe that you met representatives from those parks at COP26.

Grant Moir: We had a really interesting discussion with those from the American parks, who were really interested in our carbon audit work, and we will follow that up. National parks might be different in different parts of the world, but it is incredible how many of them are facing similar issues, such as extreme weather conditions, drought or, indeed, lack of snow. We hope that our follow-up work with the American national parks will bear fruit.

Our carbon audit work in the Cairngorms is part of the carbon audit work that we are carrying out with all 15 UK national parks. The audit has already been done in the lake district, we are doing ours now and the Loch Lomond one will be done early next year. Slowly but surely, all the national parks will have a carbon audit, and we will then be able to look at the issue across the whole UK national park family.

Jenni Minto: That is great. I wonder whether David Signorini can answer my initial questions.

Dr Signorini: Absolutely. The use of forestry data has great potential. We have a certain amount of what you might call aggregate data about volume, the areas in question, the volume of timber harvested and so on, but there is also a lot of untapped information, and I was interested to read in the background paper about how that might be used.

12:15

From a local perspective, when a new forestation scheme comes through, there will quite often be habitat surveys, breeding bird surveys, ecological surveys and archaeological surveys, which tend to exist as hard-copy or electronic reports. There is a lot of data in those reports, and there is potential to exploit them a bit more.

Grant Moir mentioned citizen science. One of our key risks relates to tree health and pests and diseases. We have our own surveillance programme and a publicly available system called "TreeAlert". If people see something that they think is a pest or a disease or is causing some kind of damage to trees, they can use that system and we can follow it up.

At the opposite end of the scale to local data, we have satellite information. Every six months, we use satellite data to detect felling, because we can see the height differential when the satellite goes over. This week and next week, we are exploring how we can use that information to quantify the damage. That system is obviously a lot quicker and—to be honest—safer than sending people out into the forests right now.

There is a lot of potential. It is about finding the best projects to take forward.

Jenni Minto: Could Graham Neville comment on accessing data from other organisations and businesses?

Graham Neville: That is an important question. In NatureScot, with the exception of data on rare or vulnerable species, we have made our data available through a variety of sources. A key one is Scotland's environment web, which is a publicly available land and data source. We have data sharing agreements with the Scottish Government through the Rural Payments and Services division and the farm data system. We also have other data sharing agreements. We are therefore coming at the issue from a position of being able to share our data and being proactive in doing so.

However, the points about decommissioning and the data that is collected during a project are important. We agree that the default position should be that the data should be made available. We could do that through putting a condition on any project or licence that is approved. However, a lot of the data that is collected by private or academic sources is not in the public domain. There is therefore probably some work to be done to improve that data knowledge. Equally, as colleagues have said, we are quite data rich as it is, and we are quite good at collecting local data as well as data on a greater scale.

As David Signorini said, a huge amount of data is collected by volunteers through citizen science. Smartphone apps are brilliant these days. If people see something when they are on a walk with the kids and the dog, they can record it spatially and immediately. That is a very powerful tool for gathering data.

We must not forget that the sectors, businesses and people who work in rural environments have a considerable amount of local knowledge. However, is that knowledge necessarily in a data set? How do we access it? We need to address those questions in a bit more depth.

Jenni Minto: That is really helpful. I certainly recognise that point in my community—I know that someone feeds in information about dead dolphins and porpoises on our beaches. However, it is about knowing the person to go to, and how to capture that information.

Does Andy Wells have anything to add from the Crown Estate's perspective?

Andy Wells: Yes, I do. Data is key to our asset management function in relation to both the details of the agreements that we manage and all the other data that we can gather that can inform decision making.

We make spatial data on our assets available on the Crown Estate Scotland website. It can be downloaded. We regularly contribute data to SEPA's aquaculture portal. We have been supporting the Dynamic Coast project, which we heard about earlier, to provide a strategic evidence base on coastal erosion. Again, that is spatial data. We have almost completed work on an open data portal on our assets, which uses technology that can make sharing data much more streamlined. We are about to launch that portal. We also benefit from free access to data from NatureScot and Marine Scotland.

I will give an example of our work in the local community. In Glenlivet, we partnered with the national park authority and other organisations in the Tomintoul and Glenlivet landscape partnership. Through that, there was a data-gathering exercise. A lot of local information was held on wildlife data. For many years, we have run a project with the local community to gather biodiversity data through a local wildlife recording group. We are keen to continue to work on and develop that.

The Convener: We move on to questions from Ariane Burgess on the national planning framework 4.

Ariane Burgess: I am keen on the national planning framework 4, and I imagine that all the witnesses, given that they are from public bodies, have engaged with it. It is a crucial tool for achieving net zero in Scotland and ensuring that biodiversity flourishes.

From the witnesses' responses to Jim Fairlie, we have heard about land use pressures. Master plans, land use plans and spatial mapping have been mentioned. We have a finite amount of land in Scotland, so there are great demands on it for housing, forestry, agriculture, carbon sequestration, renewables, infrastructure and more. There is probably a need for an overarching land use plan for the whole of Scotland, which would enable us to use our land most efficiently and equitably.

Is such work taking place? If not, would that be a useful approach? If so, how much more data and research would be required to develop such a plan? That brings us back to the joined-up approach that we talked about earlier, so I would appreciate it if anyone picked that up.

The Convener: We will give all the witnesses the opportunity to do that, but I ask them to keep their comments as brief as possible. That would be really useful.

Grant Moir: The Cairngorms national park partnership plan is such a piece of work. It tries to set out the priorities across a range of matters to do with land, communities and transport, for instance. It also develops the regional land use framework within the park. Other people are doing pilots on such frameworks, too.

I point Ms Burgess to the draft partnership plan, which is out for consultation. If she looks at that, she will see the integration of all those things. The draft plan links closely into the national planning framework, because it is also the regional spatial strategy for the national park. In the national parks, there are some really good examples of how spatial planning can be done and how we can implement it on the ground.

Graham Neville: We welcome a number of things in NPF4, such as the ambition and intent on integration. We would welcome a more directive approach to ensure that the regional land use pilots and other regional spatial strategies are more integrated. Such an approach would also give developers a bit more direction about where it is appropriate to develop and where nature restoration is the opportunity that would be best targeted.

A number of landscape partnership pilots are under way that take a more granular, spatial approach that is suitable to the landscape. We will get the biggest return on investment by developing them and developing the vision for those areas in detail.

Andy Wells: I will try to be brief. In fact, I am happy to be brief on the subject, as I do not know a great deal about it in relation to our work.

I mentioned Glenlivet master planning, which is key at a local level, and we hope that it will be a test for the regional land use partnership approach. Place making is key to Crown Estate Scotland's approach to built development, and we are working with a number of Scottish local

authorities. For example, we are working with Angus Council on developing the Montrose site that we have acquired, and we have arrangements with North Ayrshire Council for investment in place making. There is also the national marine plan, in which we are a key player with regard to offshore energy infrastructure development. Our policy team is certainly closely involved with that work.

Dr Signorini: I will be brief. First of all, we welcome NPF4, which helpfully sets out strengthened protections for woodlands.

The climate change targets are clear. We have to increase woodland creation, because we need more woodlands. However, two questions flow from that. First, what kind of woodlands should we have, and how do we balance the timber, biodiversity and carbon aspects? Secondly, where in the landscape will the woodlands go? A broader conversation will be required. It cannot be with Scottish Forestry alone; the parks, the regional land use partnerships and the local communities will have to be included.

The Convener: Thank you very much. That brings the evidence session to an end. I thank everyone for taking part and providing some valuable information. We look forward to catching up with you again during this parliamentary session.

United Kingdom Subordinate Legislation

Sea Fisheries (Amendment etc) (No 2) Regulations 2021

12:26

The Convener: Agenda item 2 is consideration of two notifications from the Scottish ministers for consent to two UK statutory instruments. I refer members to papers 3 and 4 and to page 17 onwards in our pack of papers.

Under the protocol between the Scottish Parliament and the Scottish Government, the consent notifications have been categorised as type 1, which means that the Scottish Parliament's agreement is sought before the Scottish Government gives consent to the UK Government making secondary legislation in areas of devolved competence.

Do members have any comments on the consent notification for the Sea Fisheries (Amendment etc) (No 2) Regulations 2021?

Mercedes Villalba: I have a couple of questions, but I do not know whether we can write to ministers or, indeed, how the process works. I note that the instrument

"Increases the amount of seabass that can be landed as bycatch",

and I seek some clarification on that increase. Secondly, I have some questions about the fact that it

"Revokes a closed season for fishing sandeels".

The Convener: I refer you to paragraphs 7 to 10 on page 22 of our pack of papers, which set out some questions on which I was going to write to the Government for clarification. I will ensure that the questions that you want to ask are included in that letter.

Is the committee content that the provision set out in the notification will be included in the proposed UK SI and that I will write to the Scottish Government, seeking clarification on the questions set out in paragraphs 7 to 10 of paper 4?

Members *indicated agreement.*

Wine (Amendment) Regulations 2021

The Convener: With regard to the Wine (Amendment) Regulations 2021, I wrote to the cabinet secretary, asking for an amended notification, as I felt that the level of information that we received was not sufficient to inform the committee's considerations. A response was received yesterday and members have been sent

a supplementary paper. I am now content that the information that the Scottish Government has provided is sufficient to inform parliamentary scrutiny.

As members have no comments to make, is the committee content for the provisions set out in the notification to be included in the proposed UK SI?

Members *indicated agreement.*

The Convener: In the letter that I received from the cabinet secretary, she apologises for not providing the full 28 days for parliamentary scrutiny and says that the reason was confusion at official level about whether the SI met the criteria for a type 2 notification. I intend to write to the Scottish Government to ask for some form of guarantee that such confusion will not happen again and that the committee will not be left with so little time to scrutinise any future instruments properly.

Is the committee content to delegate authority to me to sign off a letter to the Scottish Government to inform it of our decisions today?

Members *indicated agreement.*

The Convener: That concludes today's business. At next week's meeting, we will take further evidence on the climate and nature emergencies and consider subordinate legislation.

I thank everyone for attending.

Meeting closed at 12:30.

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