



Environment and Climate Change Committee

Corrected oral evidence: Protected Areas

Wednesday 8 March 2023

10 am

Watch the meeting

Members present: Baroness Parminter (The Chair); Baroness Boycott; Baroness Bray of Coln; Lord Bruce of Bennachie; Lord Duncan of Springbank; Lord Grantchester; Lord Lilley; Lord Lucas; The Lord Bishop of Oxford; The Duke of Wellington; Lord Whitty; Baroness Young of Old Scone.

Evidence Session No. 1

Heard in Public

Questions 1 - 17

Witnesses

I: Professor Jane Hill, Research Theme Leader for Resilient Ecosystems, York Environmental Sustainability Institute, and Department of Biology, University of York; Professor Callum Roberts, Professor of Marine Conservation, Centre for Ecology and Conservation, University of Exeter; Dr James Robinson, Chair, IUCN UK Protected Areas Working Group, and Director of Conservation, Wildfowl & Wetlands Trust; Professor Rick Stafford, Professor of Marine Biology and Conservation, Bournemouth University

Examination of witnesses

Professor Jane Hill, Professor Callum Roberts, Dr James Robinson and Professor Rick Stafford.

Q1 The Chair: Good morning and welcome to this first evidence session of the committee's inquiry into Protected Areas. We have four witnesses today—two before us, one expected and one on the line. The two we have present with us are Professor Jane Hill, professor of ecology at the University of York, and Professor Rick Stafford, chair of the British Ecological Society's policy committee and professor of marine biology and conservation at Bournemouth University. Down the line we have Professor Callum Roberts, professor of marine conservation at the Centre for Ecology and Conservation at the University of Exeter, and we are expecting Dr James Robinson, who I will introduce when he makes his first contribution. The transport situation has made him a little late, but we look forward to having him as the fourth member of our panel very shortly.

This is our first evidence-gathering session, and we are looking forward to hearing about how in England we can meet the Government's targets to protect 30% of land and sea by 2030—the 30 by 30 target, as it is commonly known. I will ask the three panellists here the first question, which is to give us an overview of their assessment of the current state of Britain's protected sites and how the conditions in England compare with those in the devolved areas.

Professor Jane Hill: There is a plethora of designations for Protected Area status. If you incorporate all types of Protected Area, including all the designations, the amount of land covered in terrestrial Protected Areas is not far off 30%. For all Protected Area designation, it is about 28%. The issue is that there is a lot more complexity to that number, and a lot of those designations are not Protected Area designations for nature. If you consider only those that are protected for nature, the number is a lot smaller and comes down to about 11% across the UK.

You then need to think a little more about whether those Protected Areas are effective. The way in which we assess whether a terrestrial Protected Area is effective is a measure of whether it is in favourable condition. Some recent surveys suggested that only about half those Protected Areas that are protected for nature are in a favourable condition. So, as you can see, your number that sounds quite close to 30% suddenly becomes rather small. We are probably closer to about 5% of land protected effectively for nature. Given that the 30 by 30 commitment is all about reducing biodiversity declines, supporting nature and helping nature to thrive, the amount of land effectively doing that is small.

Professor Rick Stafford: I agree with that. The figure I have for effective Protected Area across the UK is about 5%. One of Wildlife and Countryside Link's reports says that about 3.2% in England is effectively protected and in favourable condition—quite a long way off the target.

According to figures in the British Ecological Society report last year, in England we have 40.3% of the marine environment designated as Protected Areas. One thing we find is that there are not necessarily a lot of management measures in place in those marine Protected Areas. The Link report says that probably about 8% of seas across the UK are effectively protected.

It is hard to find data and draw comparisons between England and the devolved nations. One of the big problems is that there has been a lack of monitoring of these sites. About 80% of terrestrial sites have not been monitored for the last six years, so it is very hard to know what condition they are in. I do not have the exact figure for the marine sites, but I estimate it to be higher—that is, fewer sites have been monitored—so it is very difficult to know what condition they are in at the moment.

Professor Callum Roberts: I agree with a lot of what has just been said. We also have to recognise that a big chunk of that 40% coverage of English seas is made up of Protected Areas designated solely for harbour porpoises, which are not actually being protected in those Protected Areas because virtually no regulation whatever that relates specifically to those Protected Areas has been added to existing protections for harbour porpoises.

We were in the news recently for establishing the first highly protected marine areas. Just last week the Government established three, which collectively cover 1,038 square kilometres of English seas. That is good—I welcome it, because highly and fully Protected Areas are the workhorse of nature conservation in the sea. We have seen that from studies we have done summarising information from all across the world. Less Protected Areas are useful for marine zoning but do not do much at all for nature conservation.

Those three HPMAs bring our total area of no-take or fully protected space to something like 0.5% of the total area of English seas and of marine Protected Areas to about 1.1% of the total area of English seas. That is 50 times more than we had but 70 times less than the science suggests that we need. At the current rate of establishment, we will get to 30% fully and highly protected from extraction and other harms in 260 years. If the Government's intention is to use such areas to build resilience against climate change, that is woefully and inadequately slow.

We are now under way, but most of the space in marine Protected Areas in England has received very little in the way of new protections since the establishment of marine conservation zones. Most of that area is still open to industrial trawling and dredging. There have been welcome moves by Defra in places such as the Dogger Bank to establish no-trawl and no-dredge zones, but again this is too little and too slow.

There is no reason at all to think that an area will support nature conservation and the recovery of nature if you trawl and dredge it industrially. It is like expecting a field that is ploughed once a year to

contribute to nature conservation on land. So we are a very long way from doing what we need to do.

Having said that, the Protected Area network is largely representative of the range of habitats that we have in English waters and, were it to be more highly protected from extractive uses and other harms, it would be extremely effective in delivering nature conservation. So we are moving in the right direction; we are moving too slowly; we need to get serious about increasing the amount of protection in existing marine Protected Areas.

Are we different from the other devolved nations? Yes. Scotland has greater ambition at the moment. It plans to establish 10% of Scottish seas as fully protected by 2026 and the extent of its marine Protected Area network is similar to the English one. Northern Ireland is somewhat behind the curve, for various reasons, and has not been as active in establishing protections. Wales is heavily reliant on special areas of conservation at the moment and does not have very significant other designations that provide meaningful protection to Welsh waters. So I think England and Scotland are kind of in lockstep in the way that they are creating Protected Areas, but Scotland has higher ambitions for protection at the moment. That 10% is not high enough, according to the science, to rebuild nature. This 30 by 30 is not about all designations; it is about the highest levels of protection in that space to deliver the resilience and the recovery of nature that we need.

The Chair: Before I open up the questions to members, I invite them to declare a relevant interest if they have one.

Q2 The Lord Bishop of Oxford: Thank you very much indeed, and sorry not to be with you in person. Can you give us an overview of the main factors affecting the environmental state of those Protected Areas on land and sea, including both the stresses and negative effects and the positive management practices? Can you also unpack the effects that climate change is going to have in the next decade on those Protected Areas? Can we go in reverse order and come to Callum first?

Professor Callum Roberts: Well, industrial fishing is the principal driver of loss over the past couple of centuries and it is still a very significant factor influencing the existing Protected Areas. While we have industrial extraction from these Protected Areas using habitat-damaging fishing methods, we will not see significant nature recovery in any such areas.

However, that is not the only impact. Obviously there is agricultural run-off and there have been great concerns about potential legacy chemicals; for example, off the Tees estuary. Capital dredging works there might be releasing those, which could be responsible for causing marine life die-offs on the north-east coast of England. So there are these other factors that are affecting marine life; they are pernicious and difficult to deal with.

Compared with industrial fishing, plastics are relatively insignificant, but they get a lot of public attention. Agricultural run-off and nitrification, with nitrogen and phosphorus, are important factors affecting Protected Areas, and in Scotland, of course, agriculture is a significant source of not just nutrients but chemicals such as antibiotics, formaldehyde and so on, which are used in the processes. However, so far that has not been a significant issue in English waters.

Climate change overlays all of this and the waters around the UK are experiencing marine heatwaves with increasing frequency. For example, the seas off Cornwall have a couple of times in the past 10 years been up to 20 degrees centigrade. In the North Sea we have seen average warming of around 1 degree centigrade over the past 30 years or so. This is shifting a range of species northwards and is affecting the ability of some species to survive in the southernmost regions. One potential reason for the struggles that cod is having in the southern North Sea is that the conditions are no longer clement for what is quite a cold-temperate fish. So that is overlaid on everything.

If you are going to make your ocean resilient to climate change, you need to provide the opportunities for marine life to reconfigure and adapt as climate pressures alter the distribution of all the wildlife. So this is conservation that is not about stasis and maintaining things as they are; it is very much about providing the space and the protection necessary for nature to adapt dynamically and thereby make the outlook better for the ecological state of the ocean.

Professor Rick Stafford: I agree with that; from the marine perspective, fishing is the biggest issue, but there are others. Climate change is going to have a bigger effect and the two to some extent will be synergistic as well. For example, there is some evidence of that with kelp forests. Warmer species are moving into UK waters and there is evidence that they produce less complex ecosystems, which will probably be less resilient to climate change. Having said that, there is also evidence from kelp in the US which suggests that the biggest driver of the destruction of kelp is fishing. So having Protected Areas can help increase resilience to climate change.

The movement of species is also potentially an issue for the legislation around Protected Areas, because it is feature-based in general, which sometimes includes species and sometimes includes habitats or biotype complexes of different organisms, which may well be changing under climate change. There is some legislative uncertainty over whether climate change is actually going to be a legal driver of unfavourable conditions in those habitats. There may need to be a rethink around these Protected Areas that are put forward, just in terms of those features, because those features are likely to change because of climate change.

From a more terrestrial perspective, one of the main stresses on Protected Areas is ecological succession. We keep habitats in semi-natural states. Things such as heathland would normally change over

time to things such as mature oak woodlands, so there needs to be management in place to do that.

Things such as overgrazing, climate change, invasive species and pollution, very often from outside the boundaries of those Protected Areas, are key. One of the things we would need to do is to ensure that the stresses are removed within the Protected Areas. This applies to marine as well, but also externally to those Protected Areas, in particular with things such as pollution.

There are some examples of positive management. From a terrestrial perspective, the national nature reserves have created much bigger and joined-up Protected Areas that can be managed at a wider site level. They seem to be useful. There are things such as low-level grazing or species reintroductions: beavers are being suggested at the Purbeck Heaths National Nature Reserve near me.

Some of the modelling studies we have done have shown that probably biodiversity is going to increase, despite the negative effects of the climate. So there is potential to manage these bigger areas and to think about new ways of managing them.

Professor Jane Hill: Thinking very much about terrestrial Protected Areas, the key drivers of stressors to those are loss of habitat and habitat fragmentation in the wider landscape; invasive, non-native species; and the effects of pesticides from agriculture and pollution, particularly on aquatic systems—I think we have all seen the pictures of raw sewage in aquatic systems on the news.

If we think about climate change, just to put it into a much broader perspective, if we were in York now about 20,000 years ago, we would be covered in ice. All of the habitats and biodiversity in the UK have expanded and colonised since the ice age, and that is with people. So actually, people within landscapes is something that all our natural biodiversity has experienced.

When we are talking about important habitats, we are usually talking about semi-natural habitats as well as natural habitats. Those semi-natural habitats have a biodiversity associated with people, which is why we spend a lot of time in the UK talking about management. Management is important in those areas because that biodiversity is associated with traditional management activities—with people. That is just to explain why we talk very much about natural and semi-natural landscapes, which perhaps make the UK a bit different to other countries in that respect.

To come back to the issue about climate change and rain shifts, we have a very dynamic biodiversity and our Protected Areas are having to be effective within that dynamism where species are reshuffling and moving around, and communities are changing. We know that Protected Areas are effective in terms of supporting arrivals—they act as sort of landing mats for new species that arrive. There is also some evidence that these Protected Areas are effective at slowing up extinctions; our upland and

northern species are retreating northwards, and there is evidence that Protected Areas, if managed well, can slow up those declines as well. We want our Protected Areas and our Protected Area network to support that rain shifting and that reshuffling of communities.

That dynamism brings in aspects of connectivity and that the Protected Area forms a network, so it is not just the Protected Area itself but where it is placed in relation to other Protected Areas to form a resilient ecological network. We are thinking about which species a Protected Area might facilitate in terms of movement and shifting northwards as the climate changes, and which species we want to slow up the decline of as well. Climate change overlays all those other stressors and of course in some situations can act as a sort of double whammy, as I think it has been termed, to make other stressors more detrimental.

Lord Grantchester: I would like to ask a rather controversial question on climate change—please excuse me. Do you think that the drive to veganism against meat and dairy has exacerbated the decline of species and biodiversity?

Professor Jane Hill: No, I would say the opposite; it has the potential to open up much more land for nature because if we all have a meat diet that takes up a lot more land than it does if we move to a vegetable-based diet.

Lord Grantchester: I was going to say that I realise that, but in terms of emissions released from cultivation, that could exceed in some scenarios the emissions released from grazing.

Professor Jane Hill: Absolutely. One of the most effective things an individual can do to contribute to lowering greenhouse gas emissions and benefiting biodiversity is to move to a vegetable diet—a plant-based diet.

The Chair: Before Baroness Boycott comes in, I remind members to declare interests if they feel that is necessary.

Baroness Boycott: This is a question for Callum, I think. Something I do not understand is that when you make a marine Protected Area—you mentioned that you get things such as run-off and so on coming in from the land—how far does your power extend back into the land in terms of stopping someone discharging stuff down rivers? Do you have power to do that?

Professor Callum Roberts: I believe the Environment Agency has a power that extends to one nautical mile offshore in terms of controlling pollution effects there, so there is not a great deal of power. Legislators should look at that, because obviously the success of marine Protected Areas is to a degree dependent on what goes on, on land. If you have effluence and emissions being put into the sea from land-based sources, they may hold back the recovery of nature within Protected Areas and

may set a bar on how much recovery can take place, and of what kinds of species. So we need to deal effectively with those run-off issues.

You can see the seriousness of run-off as a factor influencing the marine environment in places such as the Gulf of Mexico, which the Mississippi opens into, creating a huge dead zone annually. Agricultural fertilisers fertilise a huge plankton bloom, which then uses up all the oxygen and kills everything over a large area of the seabed. If you want a good, healthy marine environment, controlling land-based sources of pollution is important.

The Chair: Just so we can let Dr James Robinson settle, Lord Duncan also wants to come in on this question.

Lord Duncan of Springbank: Professor Hill, you used the term “semi-natural landscapes”, and I want to understand what that means. When we are doing a sort of broader comparison with the UK, we are a country that—I certainly experienced it—looks like a billiard table in terms of its field systems and so on. What does semi-natural mean in that context and how does it help us understand what the UK is trying to do versus the wider question of comparisons across the globe?

Professor Jane Hill: That leads to quite a lot of complexity, but I will try to answer your question and then explain where the complexity comes from.

In many cases, Protected Areas and the habitats they support across the globe are natural habitats where they have been modified very little by people, such as a tropical rainforest. In the UK that might be an ancient woodland, for example. But because people and nature in the UK have interacted for all the time that we have had biodiversity here, since the ice age, all of our habitats, just about, have been modified by people. That is why a lot of our habitats are termed semi-natural, because we keep them in a state through management to reflect the traditional ways that people used them: the coppicing of woodland, traditional farming methods, and the regular use of grazing to keep the grass sward short.

Those types of habitats are termed semi-natural because they are kept in that state by human management. If the management was removed, that habitat characteristic would change. So a lot of management of grassland sites is keeping them as grasslands in order to support the amazing grassland biodiversity we have. Without traditional cattle and sheep grazing, the ecological process of succession would take place and they would start to scrub over and become woodlands. The reason that then becomes very complex is because it means that we have decisions to make about what we would want our habitats to be and the degree to which altering management alters the nature of those habitats to become something else. The complexity there is about what is our traditional habitat in the UK—what is the baseline that we would want to return to in a situation where some people might want to turn the clock back rather than looking forward?

Lord Duncan of Springbank: I asked the question because a benchmark baseline becomes important and it would therefore vary from country to country, as you would appreciate. Certainly, if you think about offshore, the offshore waters of the UK will be very different from those of the Netherlands, since the Netherlands has broadly reclaimed the land: its immediate offshore waters are, frankly, now land. So, again, how do we establish the baseline that allows us to make our comparisons more meaningful? That remains, therefore, a slightly subjective challenge, and it may indeed be based upon traditions and national perceptions, rather than necessarily a common rulebook.

Professor Jane Hill: Yes, absolutely. A protected area will be protected because of the features that have been identified for protection. Obviously, other parts of our landscape are being changed; for instance, the amount of tree planting that is happening at the moment, and the ways in which habitats are being restored, regenerated and returned to a previous, better condition.

However, that is a decision that we can make—that local people and communities can make—to decide what we want our landscape to look like. So, it makes this idea of a baseline quite difficult. But in Protected Areas that have been protected because of a feature, we can go back to see whether that feature is still there and whether or not it is in a satisfactory or favourable condition. So this concept of baselines becomes quite complex.

Lord Duncan of Springbank: In light of that comment, I ought to declare that I am the chair of the National Forest. That might be relevant to this discussion.

Professor Rick Stafford: With marine systems—I am generalising—if you leave them alone, generally they get better, and we do not have the same issues of succession that we have on land. In fact, in the highly protected marine areas, rather than doing feature-based protection, it is mainly about looking at the activities that would not be allowed in those areas. Essentially, if you leave them alone, they recover. In some cases, there is a good case for the restoration of habitats—with things such as sea grass, for example—but, in general, just leave them alone.

The Chair: Before I bring in Baroness Bray, who also wants to come in on this question, for the record I welcome Dr James Robinson, who is the chair of the IUCN's Protected Areas working group for the UK and the director of conservation at the Wildfowl & Wetlands Trust.

Baroness Bray of Coln: Can I just ask a follow-up question about the impact of human activity, which originally was largely to do with growing food and that sort of thing? Of course, for quite a few centuries the rotation of crops was considered the norm and, I understand, was considered quite beneficial. That no longer seems to be the case; there is not much of that going on now. Do you think we should be trying to reintroduce that as a norm?

Professor Jane Hill: There are a lot of discussions around how we manage our landscapes better and how to make sure that we feed people, conserve biodiversity, store carbon and allow people access to the landscape for their health and well-being, and that through any changes we make locally to our landscapes, we do not offshore those problems globally—for example, by buying food from another country where perhaps their ways of producing it are far worse than ours.

So, absolutely, we are trying to solve that issue about how we can produce food more sustainably using practices that we know are going to be less detrimental to biodiversity. I think there is a lot of interest in doing that and making sure that the governance is in place so that whatever we do in Britain, as I say, does not have detrimental effects on food production elsewhere.

Baroness Bray of Coln: Of course, on my question, originally that included having a year when the land was not used at all, which would not necessarily go down so well these days.

Q3 **Baroness Young of Old Scone:** I was spurred to intervene on the issue of global baselines—I am sorry. It seems to me that if you look at the protected area network globally—James will no doubt want to comment on this—there is a huge difference between countries. There are those which have shedloads of land and can afford to take huge areas and say that they are not for human exploitation but are for the protection of nature instead, and which can then use other places for human exploitation. The whole indigenous communities issue muddies the ground between those.

That is compared with us, where we have to make our land work three or four times for its living: for biodiversity, climate change, access, health, agriculture, flood risk management—you name it. So I do not find the idea of doing international comparisons helpful, because, to be honest, we are talking about apples and pears in a mega way. It would be interesting to know—because James spends his life chairing a committee that does look at international comparisons—whether there are some valid international comparisons that we could use.

Dr James Robinson: Where I come from today is the perspective of the IUCN, which provides lots of standards and methods for trying to understand how you can create Protected Areas and these other things called other effective area-based conservation measures. In combination, they should make up the 30 by 30 target.

One thing which is perhaps worth mentioning here is that there are some international definitions of what these things are. That really helps us to guide what they look like in any area where you would put these places. For a protected area, according to the IUCN—

Lord Lilley: The IUCN being?

Dr James Robinson: The world conservation union—the International Union for Conservation of Nature. It has a big membership of

Governments and civil society organisations that tries to put these standards together.

The IUCN defines a protected area as “a clearly defined geographical space, recognised, dedicated and managed, through legal or other effective means, to achieve the long-term conservation of nature with associated ecosystem services and cultural values”. There are some important words there which speak to what you said about the various different things that can be captured within these Protected Areas to allow us to benefit in many different ways.

There are lots of different opportunities across the world to see this. The IUCN gathers lots of information about case studies on how this is put into place. That generation of knowledge, through what is called the World Commission on Protected Areas, helps us to come to a common view. Of course, there will be specific differences between countries. That is obvious.

Q4 Lord Whitty: This question really goes back to your opening statements that there is a big difference between saying that 28% of land in this country is made up of designated areas already and looking at the land that is protected for biodiversity, which comes to 3% or less. Are there any areas which automatically could be included within the 30%? If so, what are they? For example, could we say that the SSSIs, which already beat the target, also go towards it? Or should we give the Protected Areas that we have a more explicit target for making biodiversity protection dominant in the management of X% of their land? National parks are included in our survey, but we understand that the OEP is not including them, for example. National parks could designate part of their area as biodiversity protected. How do you see this relationship between existing designations and the target? I think we should start with Professor Hill because you produced the figures.

Professor Jane Hill: First, the targets should be around not only the quantity of the protected area but the quality. The 30 by 30 target has kept the focus very much on quantity, but I think a lot of what you are probably hearing from us is the idea that the land has to be of good quality as well.

If you start to think about how much more needs to be done to bring 30% of land into effective conservation for nature, there need to be targets around improving the effectiveness of Protected Areas. There are some targets within the EIP, the follow-up to the 25-year plan. To make that linkage between the 30 by 30 commitment and the Government’s commitment to halt biodiversity decline, those Protected Areas must be effective. So there must be targets to make those Protected Areas effective in order to meet the biodiversity commitments. It is all interlinked.

Then you ask: where else would you start to bring in management and protection specifically for nature? Clearly, the national parks and areas of outstanding natural beauty—those landscapes—are really good places to

start, because they probably already have important aspects of biodiversity, and if there was protection and management specifically for biodiversity, they could be effective.

I know there are concerns that they should not be included at the moment because they are not being managed specifically for biodiversity. If they were to be managed and protected for biodiversity, I could imagine that the additional 20% of Protected Areas would come from them to get the Government to their 30 by 30 target and COP 15 commitment.

Dr James Robinson: It is worth saying that the UK in its entirety was one of the first countries systematically to assess the designated sites against the international definitions that I mentioned before. The IUCN's national committee, of which I am a member, produced a report called *Putting Nature on the Map*, which identified which sites and types of designations meet these international criteria.

Back when that report was put together, they were defined as areas of outstanding natural beauty, marine nature reserves, national parks, national nature reserves, sites of special scientific interest, privately Protected Areas managed by non-governmental organisations, special areas of conservation, special protection areas, Ramsar sites, and UNESCO biosphere reserves and world heritage sites. So we had an indication at that point of which areas should qualify. However, as Jane said, AONBs and national parks continue to be a subject of debate because they are not managed as Protected Areas in their entirety, which I agree we need to consider.

The other thing worth mentioning at this point is that there are some government-led processes, including the SSSI series review and the reviews for special protection areas, which were put in place to identify how the networks of these protected sites could be completed. There needs to be some further work to get those sites into place. Building that network should allow us to get somewhere towards the 30%. As Jane has said, the management effectiveness of those sites is critical. We should not be looking just at paper parks; we need to make sure that they deliver for nature as prescribed.

Lord Whitty: Professor Stafford, could you address marine areas?

Professor Rick Stafford: Largely, the same thing applies. We did a lot of thinking about this for the British Ecological Society report on Protected Areas last year. We tried to be as helpful as possible in seeing how we can meet these targets.

We came up with some criteria, which, with a bit of poetic licence, are known as the ABCD criteria. The first is: the area needs to deliver for nature in the long term. That is key; by "long term", we are talking about monitoring the protected area for 30 years at least. The second is: builds ecological resilience and improves biodiversity. Again, that is about having a comprehensive network and ensuring that it is a representative

network of different types of habitats and species. The third is: conservation outcomes through effective management and monitoring—there need to be effective management plans in place and we need to monitor them on a regular basis to see whether they are working. The fourth is: developed and delivered inclusively, which is much more about the relationship with people, whether it is multi-use marine Protected Areas or access to green spaces. Developing these Protected Areas with the community is also important.

Realistically, that opens up more than the current legally designated Protected Areas to be included in that target, assuming they have those things in place—certainly, a lot of them do not have management plans in place at the moment, particularly in the marine environment. It also means that we can begin to include the other effective area-based conservation measures—the OECSs—because, even if they are not managed for biodiversity, they can still provide long-term benefits to it.

We have also looked at how those criteria can apply to national parks and areas of outstanding natural beauty. I do not know whether there is another question on this later, but there are certainly good governance mechanisms in place and real potential in those areas to allow large areas of them to be conserved for nature and therefore apply towards those targets. It is really about applying those criteria; if they are applied, they should count towards that target.

Lord Whitty: That would apply to national parks, but for many AONBs there is not the same management structure.

Professor Rick Stafford: That is possibly true, yes.

Professor Callum Roberts: In the seas, if you look at the areas established to protect all of nature rather than just little pieces of it, such as seabirds or porpoises, the area protected comes down a long way below 30%. In the English seas, it comes a long way below 40%. I would need to do the sums on that to figure out the exact number. Those ecosystem-based Protected Areas, which can offer protection between the surface and the seabed, can be the workhorses of ocean recovery.

However, that is not enough on its own, as a very significant piece of the existing protected area network is not in place. I lead a project called the Convex Seascape Survey, which is very interested in carbon deposits on the continental shelves—the kind of system that exists around most of the British Isles. Much of that carbon, which is vulnerable to disturbance and, potentially, rerelease by seabed-disturbing activities such as bottom trawling and dredging, lies outside the existing network of marine Protected Areas.

Even if you were fully to protect all those Protected Areas that could be protected from surface to seabed, you would leave out a huge amount of vulnerable carbon. These marine deposits are as important as peat bogs and forests in their ability to capture and store carbon. The reason why they are outside the existing network, which was established around

biodiversity targets, is that they are mud, which is considered a rather low priority from a biodiversity point of view, rightly or wrongly—I think it is a magnificent habitat. It lies largely outside the existing network of Protected Areas and will have to be protected in some way if we are to safeguard those carbon stores. One way in which it could be protected without creating new Protected Areas would be to zone out seabed-disturbing activities from the areas of greatest carbon storage and vulnerability.

Baroness Young of Old Scone: I forgot to declare my interest as chairman of the Woodland Trust and vice-president or president of about 10 wildlife and conservation charities, as in the register. I thank Professor Stafford for raising the very interesting proposition in the BES report on establishing some sort of competition between areas that are not yet eligible to be 30 by 30-compliant to encourage them to outline areas that might get a prize for being compliant, if there was a prize that could be operated. Thank you for that report—it is great.

Professor Rick Stafford: The point is really that 2030 is not that far away, and if we are to meet this target, it is very hard to know whether or not these Protected Areas will work. If there is a clear road map that fits those criteria about how these areas will be managed, they should not necessarily be excluded from it. We may need to revisit that in future, see whether they are working and, if they are not, maybe exclude them from the target. It is a nice goal to have; we want to work towards it and the aim of the report was to help us meet it.

Baroness Young of Old Scone: So rather than saying that all AONBs and national parks should come under the 30 by 30 target, should there be an application process to deal with them one by one rather than as a kind of bulk buy?

Professor Rick Stafford: Yes, essentially. There may be areas of areas of outstanding natural beauty, for example, that cannot be included in those targets because they have much more intensive agriculture or something like that. Some of the structures are in place to manage those area well, so perhaps large amounts of those could count towards those targets, if they meet these ABCD criteria.

Q5 **Lord Lucas:** Thinking particularly about what Professor Hill said, is the concept of 30% set aside for nature really what we want? Even at the current low levels of areas that are set aside for nature—I think of our local SSSIs—you are protecting several square kilometres of knee-high bramble. By creating a big SSSI you have created an area with no natural human management, and no one who can afford to do any management. Rather than chalk grassland, therefore, it is reverting eventually to scrubland, I would expect.

Let us have some protected area, but why not say 15% of everywhere managed for nature—why not say that 15% of every urban park or every farm should be managed for biodiversity? Does not the work currently being published by the Botanical Society of Britain and Ireland on

complete mapping show that we can monitor on that scale and really understand what is happening, not just sampling but having a complete survey of nature in the British Isles if we set our minds to it, and therefore manage something that is much more distributed and much more involving of people and going back to the ambitions of Dasgupta, than saying, "Somewhere else is being managed for nature."

Professor Jane Hill: There are a lot of interesting questions within that. On the first one, the BSBI survey of plants is really interesting, and one of the findings there is that about half of the plants in the UK are non-native, whatever "native" means—there is a very complex debate within that as well; of course, if you talk to a botanist, they will talk about neophytes and archaeophyte plants that have been here since the 1700s and whether that makes them non-native or not. So there is the complexity there, which comes back to the comment we made before about climate change and reshuffling but also about non-native species being brought in through transport and human actions as well, and not all of those are detrimental, of course.

One of the important things about the UK is that that it is probably the best surveyed, with the best data of any country in the world. Out of all the taxonomic groups that are best surveyed—plants, birds and butterflies—in the UK they are the best surveyed, anywhere. If you are going to go somewhere to try to understand biodiversity, it is probably the UK, but there is still a lot more to do. Going back to Victorian times, we have a history of people loving to go out into the natural environment and count and record things. So we have absolutely fabulous data going back to the 1970s that tell us things about where biodiversity was and is and how it is changing, and the BSBI is an indication of that.

So we have good data; we could do better, and clearly, we also need to be collecting data from Protected Areas in a more structured way. At the moment, the surveying and the recording that we do, including through citizen science programmes, are not set up specifically to understand how biodiversity within particular areas is changing. Academics have struggled with that to show the benefits of Protected Areas with data that were not set up to test that.

That is one aspect of what you are asking. The other is around 30% versus 15%. That is an interesting question as well. It comes from studies that have shown that when habitat becomes fragmented and it drops below about 30%, populations of species tend not to be able to persist. So 30% is a very generic rule of thumb, which seems to be the point at which we think species cannot persist. There is then a wider discussion about whether 30% is enough and how that 30% should be distributed; is it 30% in a local area, 30% in England or 30% in the UK?

Then, should there be Protected Areas everywhere? That also feeds into government commitments about there being green spaces within 15 minutes of everybody, and it leads into much wider discussions around inclusivity and how the fabulous biodiversity and nature within Protected Areas should be accessible to everybody. Of course, if they are all

focused around national parks and AONBs, they will not be accessible to many people, just to a small proportion of people who are able to access those areas.

Absolutely, there should be a wider dissemination of Protected Areas to allow more of the landscape to be protected for more people to access them. But you get into another debate—I will use another acronym now—ecologists like to debate and we have had these debates for many years. We have termed this the SLOSS debate: single large or several small. I think you are suggesting that the protected area network should be many more sites that are small as opposed to fewer sites that are large. That is an ongoing debate. We know that certain species do better in fewer larger sites, and those are species that require a much larger home range in habitat to persist, whereas other species do better and biodiversity can be higher through several small sites. So there is not an easy answer, but those are the types of responses to your questions—the ways in which we are trying to tackle those to help biodiversity thrive. I am afraid that there is not a clear answer.

Professor Callum Roberts: My research team has done a lot of work on how much of the ocean should be protected, and our work was the science that initially pointed to 30% of the sea needing protection. There are a number of reasons for that. The first is that you simply cannot represent the full spectrum of biodiversity in networks that cover much less of the world's area. If you want to bring all the variety of nature and species diversity under protection, you need an extensive network of Protected Areas.

Jane also mentioned connectivity, which is an important consideration too. When you are building a network, you need to have a sufficiently dense network of sites that are close enough together to be able to meaningfully exchange animals, plants and so forth and become mutually supporting, and to do that, you need to cover a significant fraction of nature. Again, the numbers suggest that you get to that necessary level of connectivity by around 30%.

The second thing is that Protected Areas need to be large enough to be able to maintain self-sustaining populations of wildlife. To have sufficiently dense networks of large enough Protected Areas, you are looking at coverage of at least 30%. That is why the recommendation of the World Conservation Congress of 2016, for example, was that we should be establishing at least 30% of our environment as Protected Areas.

Of course, the rest of it has to be managed well; I think we can all see the shortcomings of management outside of Protected Areas. If Protected Areas are going to perform the role of preventing and reversing biodiversity loss, they need that support from better management of the surrounding matrix of land and sea. So it is not about 30% and then do anything everywhere else but about improving the entire way in which we manage and use the environment.

Q6 Lord Lilley: Dr Robinson most recently, and others previously, have referred to “managing and monitoring” these areas. I have no concept of what managing these areas means. Does it mean that you have a sort of a warden or ranger wandering around looking for invasive species, plucking them up when he finds them and shooting predators that are predating on rare species? Does it mean a bureaucratic process of making a plan for the whole area and then having inspectors to see whether all the farmers are following it? Could you tell us what managing and monitoring means, and how much it costs?

Dr James Robinson: That is a very good question. Within the Protected Areas Working Group, we believe that the success of Protected Areas as a tool for conservation is based on the effectiveness of management to protect the values and interests that those Protected Areas are protecting. That is the very reason they are there. I think it is fair to say that ineffective management and/or neglect are the most significant issues limiting the success of Protected Areas in England. Therefore, as our group believes, ensuring that this management is effective should be the focus of the Government’s efforts.

What I have learned about Protected Areas in my career is that the management you need in different areas is very bespoke, depending on the things you want to protect or the threats you want to stop. As we have heard today, there are certain marine areas where some form of management may not be required at all. However, if you want to keep some of the interest features in some of the terrestrial Protected Areas in place, you have to put some sort of management in place. Some of that can be very proactive, and some of it can simply be stopping things that would be harmful to those interest features from happening.

So there are plenty of management plans out there for Protected Areas. The IUCN’s international guidance has really good toolkits on how managers should put in place the management that is required on the site. Sometimes it can come at a cost, but sometimes it can be part of the management of those sites in the first place.

I always say that things such as sites of special scientific interest were designated at a time when people were still around and managing those areas of land, so you can manage with sometimes very minimal interventions to secure the interest features. However, because of the number of sites that are in poor condition, we know that sometimes it is more costly to get them back into good condition.

Lord Lilley: Do you have any idea of how much it costs per square mile?

Dr James Robinson: I cannot give you that figure; I do not know if anyone else has that.

Lord Lilley: On the question of costs, the most effective and apparently least costly measure was mentioned by Professor Roberts: banning bottom trawling on the Dogger Bank. Why do we allow it in any UK waters? I do not think there are any British bottom-trawling trawlers, so

if we banned it, we would not lose anything. Why do we allow it?

Professor Callum Roberts: There are UK ones. I would say that withdrawing damaging and harmful activities from marine sites is a form of management. That is what they need—for these sources of harm to be effectively controlled. The best Protected Areas that I am aware of are those where there is a staff actively engaged in making sure that this management is successful and engaging the public.

Protected Areas are most successful when they are championed by the public and gain their support. That is why you see that the Wildlife Trusts and the national parks have rangers and people out there talking to and working with the public—and with landowners, for example—to make sure that things are going well. I worked for a long time with an island in the Caribbean, Bonaire, which is surrounded by the Bonaire National Marine Park. It has a very active team of rangers, and it is one of the most successful areas in the world as a result of that investment.

Sites that are visited a great deal cost a lot more to manage than those that are visited less, because you are managing people and activities and what is going on there. In some cases, management of a protected area could be done relatively cheaply. You mentioned the Dogger Bank; that is an example where we know from the vessel-monitoring systems of fishing boats who is there and what they are doing. There are very few other people who are going to be out on the Dogger Bank, so if you simply monitor and control that group of people, you can effectively protect the site.

It is very much horses for courses here: some Protected Areas will need a great deal of input, and others will require less.

Dr James Robinson: We often talk about cost, but we should also talk about the benefits, especially the economic benefits of managing—

Lord Lilley: With respect, we never talk about costs—we always talk about benefits.

Dr James Robinson: Yes, but in terms of looking at the future and the benefits that our Protected Areas will provide to us, there is carbon sequestration, which we have heard about today—

Lord Lilley: I know all of that.

Dr James Robinson: —water quality, and a variety of different ecosystem services that these places are producing. I refer the committee back to the work that was done by the Natural Capital Committee, looking at the value of some of these habitats. The return on investment for the public purse is quite significant. Therefore, we should not just think about the cost. As you say, sometimes we do not always talk about that—

Lord Lilley: You do not even know what it is, so you cannot say that we talk about it all the time. None of you knows what it is. I do not know

what it is.

The Chair: I think they said that it is not the same in every place, because it depends how—

Lord Lilley: They did not know where it was anyway.

The Chair: No, but the cost will be differential—

Lord Lilley: Tell us an example.

The Chair: —on the basis of what they are saying—

Lord Lilley: Indeed.

The Chair: —according to how many people are there, and therefore there are different—

Lord Lilley: I think they can probably defend themselves.

The Chair: I am sure they can. Professor Stafford, would you like to come in?

Professor Rick Stafford: I guess the key thing with management is that, if you look at something like marine conservation zones for England, they are set up on ministerial orders which protect specific features, but they do not ban activities. So we need management measures in place, which can include things such as fishing practices.

Some of the most effective management measures in place in English waters are probably from the IFCA—the inshore fishery and conservation authorities. They probably have done more, although they have authority only over fishing. They do not have authority over things such as pollution coming in from other areas. They also have authority only up to six nautical miles, so anything further than that tends to be much more poorly managed.

On cost, in terrestrial environments, bigger nature reserves—things such as the national nature reserve in Purbeck Heaths, which is near where I live—are looking at much more cost-effective management measures. I cannot give you exact costs, but some of those measures include things such as low-level grazing across the site, which you cannot necessarily do if you have smaller areas, or species reintroductions. They think that things such as beaver reintroductions will do a lot of the work that was essentially done by manpower before. So there are ways to reduce those costs.

In terms of monitoring, one of the other important things is assessing how good those protected features—or biodiversity in general—are. Again, there are ways to reduce costs. Jane has mentioned things such as the great butterfly records, and there is a growing citizen science community who could feed into some of that monitoring activity as well.

Q7 **Lord Grantchester:** I declare my interest of having a farm, but not in

any designated area. I am interested in the discussion we have had this morning, particularly on this question of 30 by 30. Following on from that, do any of you have a figure of the percentage of national parks or AONBs that would be included—

The Chair: Lord Grantchester, could you speak up a bit? I think the Duke of Wellington is struggling to hear you.

The Duke of Wellington: Forgive me, but the Committee Room is muted.

Lord Grantchester: Do you have a figure for the percentage of national parks and AONBs that are included under other designations? Would that mean that there is a crossover of management within those areas, which perhaps mitigates against them working effectively, or not?

Following on from Lord Lucas's question about the effectiveness of size and the answer—which was that below 30% it tends to be less effective—I wonder whether that translates into any minimum size, rather than a percentage of an area. Would that change between land and sea? Is it meaningful at all when you think of the "Beagle" going around the South Atlantic, where there are little islands cut off from each other which then have different evolutionary patterns? Is there anything to come out of that discussion?

Professor Jane Hill: I will pick up what I see as the slightly easier question, about size. Larger areas are better, but that is a rather unsatisfactory answer because it is not giving the threshold size above which you would perhaps aim to have that as a target. However, bigger is better, and of course larger sites have fewer edges, due to geometry, which means that any negative impacts from outside the protected area will be minimised as well.

When we come back to questions about connectivity, if that protected area is not large enough to support that population, or that species is shifting, having smaller patches of Protected Areas can provide corridors and so-called stepping-stone habitats. They may not be large enough for the population to persist there in isolation but they act as conduits to allow species to move through the landscape. So there will not be a one-size-fits-all recommendation on size other than the general principle that larger is probably better for a number of different things. However, if you focus only on those larger patches of protected area habitat, you are forgetting about the wider landscape and its value for having smaller Protected Areas.

On your first question about AONBs and national parks, I do not know.

Professor Rick Stafford: I have some data on that. Obviously, there are SSSIs and other Protected Areas in national parks. I am just trying to look at these figures and see how they add up—this is not something I have thought about specifically. It looks like that is a relatively small amount in terms of percentages—I am not 100% sure on that. We sometimes find that multiple designations can be good and can help nature more. Potentially, things such as SSSIs have different

management actions associated with them compared with things such as the special areas of conservation. So, collectively, they can work well. However, we have found in the English uplands, for example, that inside national parks only 20% of SSSIs are in a favourable condition—I think that is probably specific to uplands—and outside national parks 18% are in a favourable condition, so whether they are in or out does not seem to be having a really big effect. I do not think there is necessarily a conflict or a benefit at the moment.

Dr James Robinson: We should really be using the science to look at what the landscape-scale interventions should be; let us refer back to the Lawton review, which talked about bigger, better and more joined-up. There are two studies that will be really helpful with this. For example, Cunningham et al in 2021 found that 41.5% of protected landscapes—that is national parks and AONBs—in their 10x10 kilometre cells are the highest priority for delivering 30 by 30 in a way that maximises biodiversity outcomes, and Isaac et al back in 2018 recommended expanding the area of high-quality, semi-natural habitat to cover 40% within national parks and AONBs in England by 2042 to enable these large areas to be the focus for the development of resilient ecological networks. So there is some science here which is helping to guide us in the right direction as regards where and how we should be doing it.

Q8 Lord Duncan of Springbank: I have a couple of points. First, I must admit that I struggle with bringing land and sea under the same common approach. I believe that the territoriality aspect of marine areas is more challenging to address, particularly when you think of fishing. There it might be better, following Lord Lucas's concept, to improve all fishing approaches, which might then improve the escape of smaller species and so forth, rather than trying to create designated zones in the sea where a significant amount of migration will happen anyway for certain species.

The other part of that is that, while we look upon the land as semi-natural, we will be applying that to the sea as well. There will be areas that have been fished for a great deal of time, and consequently, that natural world that we think of will be affected by man itself. I throw into that equation the fact that fishing is a dangerous pastime and profession, and you really want it to be as efficient and safe as you can make it so that people are not out on the high seas for very long periods of time, and you create a much more challenging conflict to try to manage.

The question I will segue on to from that—I think it is the question of protection versus restoration—is that in the marine environment, it is possible to see a restoration happening through a natural absence of intervention. But when you look at the land—again, I come back to Lord Lucas's point—it might be better to try to look at all the land and see how you can improve the methods which are used to farm it or to manage it rather than trying to create designated small zones themselves. By doing that, you may end up focusing only on a small zone which you think you have protected, whereas in truth you really want to protect everything using better methods and approaches, which is where a Government focused on doing that can make a huge difference to the 100%, not just

to the 30%.

Professor Rick Stafford: There is a whole suite of scientific evidence which shows that Protected Areas are very good for biodiversity, and that applies in the marine and terrestrial environments. That does not mean—I think you made this point earlier, James—that we can ignore the rest of the sea or the rest of the land; we need to manage that in a better way for biodiversity. Essentially, if we have natural areas and then complete urbanisation everywhere, those natural areas will not work.

At a high level, something like the criteria for establishing Protected Areas that I looked at applies from a marine or a terrestrial perspective, but for the management measures that need to be put in place, there is not a one size fits all, either in the sea or on the land. It is very much about removing the stressors and knowing what they are in order to be able to put the right management measures in place for those sites.

You are absolutely right about the marine habitats being disturbed; they are very disturbed. Even if we fish at the maximum sustainable yield, which sounds very good, we will have taken about 70% of the fish out to achieve the highest growth rate. The difference is that we can let those habitats recover. They may never end up as absolutely natural sites but they can recover to become more natural sites, whereas in terrestrial environments, we have an idea of what we want those habitats to be. Essentially, we are stopping the succession in some places, so we are not going into things such as oak woodland as final communities.

Professor Jane Hill: I will follow up on that, because I see this as a discussion about the value of Protected Areas as well as the wider habitat. I do not know whether I am mishearing, but I am getting a feeling that perhaps the message is that Protected Areas are not very good. I do not think that is the message we want to send; it is about needing our Protected Areas and they should be better—perhaps that is a more important message. We have been talking about how it would be good to make them better and how, through better management and monitoring, they could be made better. One of the other ways to make Protected Areas more effective for nature is to improve the landscape within which they are embedded, which is about what other activities you might do within the wider landscape that would have benefits for the Protected Areas without removing the focus on and the benefits of what people term the crown jewels of our biodiversity in the UK. The other thing about doing more within the wider landscape is that that is often what most people benefit from and can engage with, which brings in citizen scientists and the benefits from interacting with and connecting with nature.

The other thing, thinking about the importance of Protected Areas versus the wider landscape, is the question of which species have been selected as features to protect. Very often, those are the species that are very dependent on the Protected Areas. So, although improving the wider landscape is likely to have very positive beneficial impacts on biodiversity as a general metric, it is likely to benefit species that are fairly general

anyway. That is a good thing to improve the biodiversity of, but the Government have to make sure that those specialist threatened species are also protected. They generally need the Protected Areas in order to thrive and do not do well in the wider landscape. This discussion about what to protect and how feeds back into what species you want to protect and why.

I would like to give an example, perhaps in a more positive frame, to illustrate some of the points and pick out some of the issues about managing and monitoring. There is a lovely protected area in the Slad Valley that is owned and managed by Butterfly Conservation and Gloucestershire Wildlife Trust. The bit of it that is an SSSI is only about 10 hectares, so it is really quite tiny. It is managed really well through bringing in traditional cattle-grazing and through clearing scrub—managing it very much, as you might imagine given that it is a butterfly conservation site, for butterflies. It supports about a quarter of UK butterfly species in just a 10-hectare site.

That is an example of a successful protected area that has been managed and monitored very well—perhaps, dare I say, rather cheaply if it is only 10 hectares in size. But it is part of a wider network and landscape in the Slad Valley that is supporting that as well. So there are examples of where we know we can do it and we can be very successful in helping nature to thrive if the landscapes are managed well. That is an example of a chalk grassland landscape which is being managed in an early successional type of habitat to reflect its traditional management by people, going back thousands of years.

Lord Duncan of Springbank: I applaud that example and think it is extraordinary, but I would rather that we were not talking about a limited number of hectares. I would rather see farms across the land improving all their standards to ensure that we had far greater biodiversity on their farms. But the question then is how you achieve that. My slight fear is that by designating smaller zones, you in some ways ignore the wider question of the wider challenges faced by farmers and how you improve that.

I know that the Government are minded to address this. But coming back to Lord Lilley's point, how much will it cost, and what do we need to do to encourage farmers to change their methodologies? How do we encourage them to embrace wetlands on their land rather than seeing them as needing to be drained to create more farmland? How do we do that part, so that we have butterflies wherever we wish to walk, frankly, rather than simply in a place people visit occasionally to see them? That is wonderful, but at the same time, it is slightly dispiriting to think of.

Professor Jane Hill: I am going to carry on talking about butterflies. I should say that I am currently the president of the Royal Entomological Society, and I do a lot of my research on butterflies, so I know an enormous amount about them. They are also very well studied and incredibly popular with the public, so they are a good indicator and taxonomic group to understand aspects of our biodiversity.

I understand that in the television programme David Attenborough is going to be presenting very soon, one of the examples he is going to talk about is the large blue butterfly, which went extinct in the UK in the 1970s and has been successfully reintroduced. That butterfly will not survive in the wider landscape; it needs very specific management and monitoring. That has been successfully carried out in the south-west, where the butterfly has been reintroduced—it is a real success story—through the management of the protected area for that species.

If you were to go out into the wider landscape and manage the areas much more sensitively for nature, you would get more butterflies—absolutely—but they would be the more general species that occur everywhere. You would be boosting populations of what we call more generalist species. I fully support that; that is absolutely fabulous. We love all butterflies, whatever they are. However, going back to the government commitment on supporting biodiversity, it is also about supporting those rare and threatened species as well as making the more common ones more abundant. The decisions you make about whether you focus on Protected Areas or the wider landscape will have impacts for those different types of species.

Lord Duncan of Springbank: That is a very helpful clarification. I should also say that I am a palaeoentomologist by training—I have not said that out loud for 30 years.

Q9 The Lord Bishop of Oxford: Just from these answers—and the questions—this question of national parks and managing them intentionally as Protected Areas is clearly very significant in terms of reaching 30 by 30. Could you give us some examples of good practice where that is happening? How far off that target are we? What would need to happen for that to work well? Is there any challenge with the geographical distribution of national parks, particularly across England, given that the majority are in the north rather than the south-east?

Professor Rick Stafford: I can give you a few examples of some of the things that we want to do. Basically, as I have said here, we need a coherent plan to protect biodiversity within those areas in the long term for them to count towards the 30 by 30 target. There are a few things that have been done. The Cotswolds AONB has expanded the amount of high-quality semi-natural habitats; 40% of it is now made up of these habitats. On nature recovery sites, the Exmoor National Park has given 10% of the area to nature recovery.

There probably is additional funding. I have something on costs from the Glover review, which I think was a little while ago. At the time my figures were done—I believe there has been some extra funding to national parks in the last few years—funding was £6.7 million, but the Glover review suggested that it should go up to £13.4 million. Other things include appointing biodiversity experts to the boards of national parks so that biodiversity becomes much more of a discussion there.

Those are some of the things we can do. We go through a few more in the report, but those are probably the main ones, in terms of what you have asked.

Dr James Robinson: I spent quite a lot of my early career working in the Broads National Park, where there are some fantastic examples of biodiversity doing very well. The Broads are a really good example of how we should be looking at nature conservation in national parks.

To add to some of the things that have been said already, the Glover review set out some really positive ways in which national parks and AONBs could be taken forward to make sure that our protected landscapes become truly effective Protected Areas. One of these is to amend the purposes of those protected landscapes—to really strengthen the first purpose to place a real emphasis on nature’s recovery. Another is to make sure that we strengthen some of the duties on statutory bodies to implement and further those purposes in those protected landscapes. Another thing we should look at is making sure that you get the right people, who know how to do this, on the boards of national parks and AONBs. That makes a massive difference to how successful they can be.

The resources issue, as we have already heard, is significant. We have heard some good news about national parks recently, but AONBs still fall behind in terms of the resources that are required. There are lots of people in those places who really want to make a difference but find it very difficult to do so because of the resources available.

The Lord Bishop of Oxford: Thank you. It might be worth flagging some of those things for possible recommendations later.

The Chair: We will certainly do that.

Q10 **Baroness Boycott:** You have answered quite a bit of this question, but this is coming at it from the point of view of what the regulatory regime and the Government can and cannot do and what they should do better in order to achieve all these goals.

You presumably have the question—which is in three parts—about how the regime could be better to drive the improvements; what you think of the Government’s proposed reforms to the HRAs and equivalent mechanisms; and whether we are considering the right factors in Natural England’s designation programme, and indeed in the HPM pilot designations.

I would like to hear from all four of you, so perhaps James could start and dig into what we as a committee can recommend, get behind and help deliver. This is all fantastically complicated—the more one learns about this, the more complicated it becomes. If you think of it from the point of view of, say, a landowner—I do not know what Lord Grantchester thinks—and what kinds of things I can do, what grants I might be able to apply for and what benefits I might get, you would sort of go, “Help!”, and possibly give up, especially if you were relatively small and so were

the sums involved. Does simplification become one of the things that you want to see in regulation? Personally, I am interested in it, as, having listened to you and having read quite a lot about it, I feel that this is super-complicated. When you talk about how collective things can work, I completely understand that, but understanding what you can layer and layer on is also quite complicated.

Dr James Robinson: I will try to answer the question, which is quite vast as regards the types of things we can do. I will cover the habitats regulations and will speak on behalf of the non-governmental members of the Protected Areas Working Group, because we are talking about government policy here.

It is worth reminding ourselves that the habitats regulations and the directives they came from have been subjected to multiple reviews over the years, in Europe but in England as well. Those reviews have consistently reached the same conclusion, which is that the regulations generally work well for nature and do not impose unnecessary burdens on business, but that the implementation of the habitats regulations needs to be sharpened to make sure that they deliver what they should.

On the question of requiring simplification, it is complex; the one thing I picked up from this conversation today is: are we all at the same level of understanding about what these different things that we talk about are? Sometimes, I am not sure that we are. Certainly, my belief is that we should be levelling up the protection across our protected area network and should be looking to attain the highest standards of protection—that is what the international standards require of us—and build from there. Therefore, the level of protection across our protected area network should meet the same level as that required by the habitat regulations for all our Protected Areas, and I see no reason why that should not be put in place.

Baroness Boycott: Okay. Before we move on to Rick, what is the current state of the Bill that is going through our House at the moment—the repeal of the EU laws? What are you particularly worried about in that? We heard from Natural England last week about a number of things that it is very anxious about. What are your thoughts on that?

Dr James Robinson: For me, the concern is that the current legislation is weakened and that even though we may think that we have left some of the things because we have left the European Union, we still have other international commitments. We are a contracting party of the Ramsar Convention and are part of the Convention on Biological Diversity. Those things remain and require those standards to be in place, so we do not wish to see any weakening of that legislation.

Baroness Boycott: Would you be able to let the committee have a brief outline of the particular things in the REUL Bill that are causing you anxiety and where you are worried that standards might slip?

Dr James Robinson: We would be delighted to do that.

Baroness Boycott: Fantastic. Professor Stafford, I would also ask you the same question at the end, but just take that as read.

Professor Rick Stafford: I largely agree with that. I have come into a lot of this work from a PhD in counting snails on rocky shores. You see these regulations and they are confusing—

Baroness Boycott: It is as if you get one regulation, then you get a review that moves the regulation somewhere else, and then another one and another one.

Professor Rick Stafford: The idea of simplifying them can be attractive but there are issues around that. Some of those I have briefly mentioned before, such as where you have multiple designations on a site. They can work well and can improve the resilience of those sites. We were asked—the British Ecological Society and me—to go to one of the early reviews on these regulations. It is presented as a simplification but we do not know what those new regulations would be, and there is danger of them being watered down.

Baroness Boycott: Are you talking about what the consequences of the repeal of EU law Bill might be?

Professor Rick Stafford: Yes. We do not know what new regulations which might be put in place would be. There is a potential danger that they will be watered down, and we know that there is a legal framework at the moment, and so even if they are not well implemented in terms of management, these regulations work. Again, I would not like to see that happen now. This is not the right time to be doing it as we are trying to get to 30 by 30. If it is done, there needs to be a very strong level of scrutiny by different agencies of what the regulations would be. That has not been made clear yet.

Professor Jane Hill: I will pick up the question about ELMS and those aspects. The Protected Areas we have been talking about—the SSSIs, Ramsar sites, SPAs and SACs, in particular—have been protected for decades. Some of them go back to the original Rothschild sites from the early 20th century, so those have been permanent sites, albeit perhaps not always in good condition. Now you have new schemes coming in where agricultural landscapes could be managed through the three different schemes in ELMS. They have the potential to address different components of biodiversity, whether it be through more sustainable farming, having better hedgerows, or doing activities on the farm that help to improve the matrix, to much larger-scale landscape approaches, which will, I hope, support species' persistence in the much wider landscape. Some of those activities will be permanent—or however we deem permanent: for decades rather than just a few years when the farming is taking place and the rotation is happening.

Supporting biodiversity comes back to the previous point about which of these Protected Areas are delivering for threatened and rare species that require specific habitats and which of these will support more general

biodiversity and boost biodiversity in the wider landscape. A good way of moving forward is to have a mix of those.

Baroness Boycott: You would see ELMS as a way of increasing the general levels of biodiversity but, again, in your view, is ELMS sufficient financially in terms of management and things like that to encourage that greater biodiversity on a wider level than the sites?

Professor Jane Hill: It comes around to how much we want to raise biodiversity by. The commitment of the Government is to reduce biodiversity declines and then to reverse those and have positive gains. Of course, biodiversity is a compound metric; you do not go out and measure biodiversity but measure different components of it. Some of those metrics might be improved more by some of these ELMS activities than others.

For example, if you are interested in boosting the biomass of insects overall, you might do that very effectively and that would have benefits for swifts and swallows, and so on, which perhaps are not so picky about the particular insect that they are feeding on, but it may not be effective for a threatened species or bird with very specific habitat requirements that may not be covered by any of those elements of ELMS. Out of those, I would imagine that the landscape one, because it is operating at a wider landscape level, is likely to be more effective by producing more permanent areas of natural and semi-natural habitat for biodiversity.

Professor Callum Roberts: This is an area where we have a great opportunity to simplify things at sea. As Rick said, leaving alone is the best and the most cost-effective way to deliver nature recovery underwater. The highly protected marine areas are a step in the right direction but a very tentative toe dipped in the water. That kind of protection, as we have seen from other parts of the world, needs to be rolled out across far more of the network—in fact, right out to the whole 30%. That way, you would really deliver nature recovery in the water. There has been a nationwide search for Brexit benefits—often it has been difficult to find them—but one Brexit benefit is that we have much greater agency over the governance of our seas than we did when we were a member of the European Union.

So we have the potential to enact significant protections in our marine space much more easily than we did. That agency has not been taken advantage of as yet, but it should come. The way we do it at the moment is to try to park the model from terrestrial conservation into the sea and identify features—and only seabed features counted in the marine conservation zone exercise—and then protect those features. The net result of that has been that almost no meaningful nature protection in the sea is taking place.

We have large marine conservation zones—for example, off the coast of Norfolk—where essentially the only measure that is meaningful is the protection of a tiny, pocket-handkerchief-sized area in the middle from bottom trawling, which corresponds to a patch of worms. That is not

ecosystem-level management. We are not going to generate much recovery of UK seas like this. It is very expensive and ineffective to try to manage it on this basis. That whole-site protection, surface to seabed, is the way forward, and it has proven very successful in other countries.

To go back to an earlier question, we need restoration of some kinds of sites and habitats to complement that, particularly coastal habitats. Things such as seagrass beds and salt marshes may need active conservation and restoration efforts, particularly as sea levels rise. The phenomenon of coastal squeeze will see those habitats shrink as the sea level rises against hard human structures such as sea walls. In some places, we may need to undertake managed realignment to improve salt marshes.

We also need to think hard about reintroductions in the sea. It is a very commonplace thing to do on land, but there are marine species that would benefit greatly from this too. We are toying with the idea of sturgeon reintroduction; these were largely eliminated from UK seas over 100 years ago. Giant skates, which used to be very common in waters all around the UK, have now retreated to a few pockets where bottom trawling is not permitted or is not possible because of the rugged nature of the seabed. Those are the last refuges. If we want to see those animals recover more widely, we will need to reintroduce them to places such as the North Sea and the English Channel.

Q11 **Baroness Young of Old Scone:** We have talked a bit about ELMS, but there is a whole plethora of different measures popping up which could have an impact on Protected Areas, on which it would be good to get your views. I am talking about nature recovery networks, local nature recovery strategies, ELMS itself, natural capital approaches, and particularly biodiversity net gain. I do not necessarily want to talk about how they will operate in the wider landscape, but could these things be made to deliver better for Protected Areas—particularly biodiversity net gain? I do not think we should forget that ELMS is supposed to be the successor of common agricultural policy payments, which were probably the most perverse incentive to wreck Protected Areas that we have seen. ELMS needs to be in the process of reversing that and doing some good.

Perhaps I could start with Rick. Of that huge list we now have coming into the toolbox, which of them do you think have potential? Do they need to be changed? How could they be made to work for Protected Areas?

Professor Rick Stafford: All these things will be good in the wider area. I know that is not what you wanted me to talk about, so that is all I will say on that. On whether they can be counted towards 30 by 30 and classed as Protected Areas, the majority of those schemes are probably too short-term. We need to be protecting nature in the long term, which is really about 30 years minimum—that is where the biodiversity net gain target at least is set.

If they are long-term, according to the criteria we put forward, you do not necessarily need to have an SSSI or SAC designation for something to count towards that 30 by 30 target. We are very keen on the idea that things such as OECMs could contribute to the 30 by 30 target. So, if there is long-term protection that meets those criteria, yes, it could count. If some of the local nature recovery strategies were cemented longer term, I think that they could count towards that target.

Baroness Young of Old Scone: Just before you leave that point, are we actually doing anything on OECMs?

Professor Rick Stafford: Scotland is very keen on them and I think will introduce them. I think they are one of Scotland's implementation methods, probably far more than they are one of England's. They could be a very useful tool. Again, aspects of national parks and areas of outstanding natural beauty could be OECMs. They would be areas which may not be managed primarily for biodiversity but will increase biodiversity in the long term. It could include farmland, if it has that long-term protection, or commercial forests. Even things such as offshore wind farms could perhaps become OECMs and begin to contribute to those targets.

Biodiversity net gain could have an effect. Again, if that money is for habitat restoration, species reintroductions or things that make a difference to the biodiversity at the site, then, yes—potentially—biodiversity net gain could be an interesting tool for enhancing Protected Areas.

We have to be careful about what has happened with carbon offsetting, where we are not really taking in additional carbon in some cases. We are protecting forests, but they were probably not going to be chopped down anyway, and they were already taking in carbon. So it has to be about making meaningful gains on what is already in those Protected Areas. That may be where things such as habitat restoration really come into play. It could play a role there.

Professor Jane Hill: It comes back to the point about benefiting Protected Areas through what we might call softening the matrix—making the landscape around the protected area less detrimental, therefore boosting biodiversity more generally and allowing species to move through landscapes much more easily. Some of these activities will reduce the barriers to species' movements across inhospitable landscapes.

The issue then is about permanence and the degree to which, for example, your biodiversity net gain is a local activity, what habitat is being replaced and what it is being replaced with. That is probably easier to do with some types of habitat than it is with others. Obviously, ancient woodland is very hard to replicate—it would be hard to fit any newly planted woodland, and biodiversity net gain from that, into this. It might be easier to do with some sort of improvement to a brownfield site through more natural grasslands, for example. I suspect that as the

biodiversity net gain process rolls out, it will be clear where those gains are most profitable and can be developed more easily, and which ones cannot be delivered.

I would like to say something more generally about tree planting and some of the carbon sequestration and offsetting. What we do not know is how increases in tree planting are going to affect biodiversity more generally, because many UK species are not associated with woodland, so we cannot necessarily make the assumption that more trees are going to deliver more biodiversity.

Baroness Young of Old Scone: I shall debate that with you outside the confines of the committee.

Briefly, before I finish, could we move on to the marine environment? Most of these schemes do not impact on the marine environment at all. My understanding of what you were saying, Callum, is that the reality is that if we were more vigorous on fisheries management measures—which we now can be as a result of leaving the European Union—we could probably resolve the vast majority of problems in the marine environment. Am I oversimplifying that? Is that the one other tool that we need to start using more vigorously?

Professor Callum Roberts: That is a big tool. We talked earlier about the impact of upstream activities on the marine environment, which is where all these different schemes come into play to benefit the downstream ocean. Where you are getting reductions in, for example, run-off of sediments, you are improving sewage treatment and processing, and reducing agrochemical losses to the marine environment, those are all things that will benefit marine conservation.

The marine environment has largely been left out of efforts to draw down carbon and mitigate climate change but there is a great opportunity there. One thing that we are trying to look at through the Convex Seascape Survey project that I mentioned is how much of an ally can we make the marine environment in the fight against climate change, and can we safeguard those carbon stores that are on continental shelves to a much higher degree? In fact, doing good fisheries management, reducing the amount of harmful damaging activities that are out there in the marine environment, will probably go a long way to helping us harness that carbon-storing power of the marine environment too.

Perhaps some elements of terrestrial schemes that are interested in trapping carbon could be directed towards the marine environment. I think they are at the moment with regard to salt marsh restoration and recovery, because a lot of carbon is being stored in those coastal salt marshes. Restoring those is also good for coastal protection, which will minimise or reduce the costs of harder forms of protection that would be necessary if those coastal salt marshes were not enhanced or protected better.

Q12 **Lord Bruce of Bennachie:** Thank you all for everything you have given

us this morning. We see something that is complicated and patchy: some good and some not so good.

Scotland and Wales represent about 40% of the land and marine area of Great Britain. You have mentioned them in passing. First, the UK has been rated in the bottom 10% for biodiversity according to the biodiversity intactness index. Is that fair? Do you accept the criteria, or maybe we have looked harder than other people have? Secondly, how is that distributed across the UK? The UK has international agreements, not least the Montreal biodiversity framework, so the UK cannot just say, "Scotland can do what it likes" without reference. Is Scotland delivering a better share of the biodiversity or a lesser share?

You mentioned that Scotland is ambitious in its biodiversity objectives. Forgive me for saying so, but the ambition of the Scottish Government and the outcomes are usually about 360 degrees apart. What are they actually doing? You mentioned OECMs; I have seen discussion of Scapa Flow but also scepticism as to what it will actually mean.

Finally, we just had a brief discussion about fishing. Fishing played a disproportionate part in the debate about Brexit and it is a disproportionate part of the Scottish activity. Therefore, when Barbara says, "Let's just stop all these terrible fishing activities", the politics of that are not quite as straightforward. How good and how proactive is the co-ordination between England, Scotland and Wales and Northern Ireland, particularly for Great Britain? Is it good enough to ensure that we deliver the UK's commitments on biodiversity?

Dr James Robinson: That is a really good question. I would like to bring the UK overseas territories into this conversation as well because of their—

Lord Bruce of Bennachie: A question about that is coming up.

The Chair: If you can bring them together, that might help. Given the timing, that would be extremely helpful, Dr Robinson.

Dr James Robinson: The BES report talked about the general status of effectively managed Protected Areas across the UK—it is about 5%. Often each of the different countries and each of the UK overseas territories has very different protected area designations and different ways of monitoring so it is sometimes very difficult to compare the data across the whole of the countries.

However, there are some really good examples of where this has worked well. There used to be a special protection area Ramsar working group. It was made up of all the four countries, which came together, working with civil society groups as well, to try to map out how best to deliver that protected area network. That was a really positive thing but that group has remained dormant. Things like that would be helpful to try to bring that together. The Protected Areas Working Group meets regularly with Defra and we have urged it to try to bring together all the four countries; to get some efficiency in how we wish to deliver 30 by 30, that seems sensible.

I will mention the UK overseas territories very briefly. Obviously, they need a lot of support to help them to be able to deliver something with very small resources. I met the Environment Ministers' Council recently to talk about what they would require. That is one thing that we are looking at as a group to help the JNCC and Defra to find out what those overseas territories need because of the significance of the biodiversity that they support for the UK's territories.

Professor Rick Stafford: It is hard to get comparable data to see how the devolved nations are performing. From the BES report's perspective, we had senior members of NatureScot and National Resources Wales on our steering committee. Although we did not have anybody from Northern Ireland, the report did go to Northern Ireland for review as well.

We are working towards the same goal—everybody is working to 30 by 30. Perhaps the ambition and the methods of implementation from Scotland might be a little higher and a little bit different. I think I mentioned before that Scotland is very keen on the OECMs as a way of meeting its targets, particularly on land but potentially in the sea as well. That was the main difference that came out.

Lord Bruce of Bennachie: Is there no sort of academic or professional study just of best practice—what works in Scotland that might work in England, or vice versa? It is slightly disturbing given that everyone is doing their own thing and nobody is even monitoring what is going well and what is patchy, and what could be learned from it.

Professor Rick Stafford: It is very hard, because we do not necessarily have the monitoring data from any of the countries to see what is working.

Lord Bruce of Bennachie: That is the problem.

Professor Callum Roberts: Scottish seas are similarly poorly managed to English seas and Welsh seas. We have to level up across the whole of the country if we are going to see effective nature conservation and recovery. Where we do see some world-leading conservation activity taking place is in the overseas territories. There are some very large marine Protected Areas in places such as Ascension, Pitcairn and Chagos, which are fully protected from exploitation and other damaging uses that can be managed locally.

There is a big disconnect in our nature conservation effort, ambitions and level of effectiveness in the overseas territories compared with back home. Obviously, the highly populated overseas territories are in a slightly different category, which is more similar to the UK mainland. But as far as they go, we have some of the world's best marine Protected Areas in the UK network when we consider the overseas territories.

Professor Jane Hill: I will just follow up on the overseas territories from a terrestrial perspective. There are very different challenges there compared with the UK, which perhaps comes back to previous comments

about global issues and comparability. Many of the overseas areas are very isolated islands; they will have quite low diversity but will probably have a lot of endemic species and are very vulnerable to introductions of non-native alien species. So they are quite different in many cases from the challenges in the UK. Whether from a terrestrial perspective the same approaches can be used is unclear.

The Chair: Thank you. On that point, I will close the meeting, as we said we would finish at noon. One thing that perhaps the committee has not been able to cover but which would be useful for us is if you have any supplementary information about data monitoring, what is out there and what the gaps are, as that is a key issue for us to think through. I thank all four of our witnesses today. You have given us lots to think about and to read—I thank you for those who made submissions, which we studied very carefully and which we are very grateful for receiving in advance.

A transcript will be taken and you will get the chance to amend that if you feel that we have not reflected your comments accurately, and equally, if you want to watch yourself again on the parliamentary website, you are at liberty to do so, as indeed is the wider population. On that, I thank all four of you very much for your contributions and close the meeting.