



Environment, Food and Rural Affairs Committee

Oral evidence: Species Reintroduction, HC 849

Tuesday 31 January 2023

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Members present: Sir Robert Goodwill (Chair); Ian Byrne; Barry Gardiner; Mrs Sheryll Murray; Julian Sturdy.

Questions 1 - 69

Witnesses

I: Dr Katie Beckmann, Lecturer in Wildlife Health and Conservation Medicine, University of Edinburgh; Professor Richard Brazier, Professor of Earth Surface Processes, University of Exeter; Dr Sarah Dalrymple, Reader in Conservation Ecology, Programme Leader, BSc Wildlife Conservation, Liverpool John Moores University; and Dr Tony Sainsbury, Senior Lecturer in Wild Animal Health, Institute of Zoology.

Written evidence from witnesses:

- [Professor Richard Brazier](#)
- [Dr Katie Beckmann](#)
- [Dr Sarah Dalrymple](#)



Examination of witnesses

Witnesses: Dr Katie Beckmann, Professor Richard Brazier, Dr Sarah Dalrymple and Dr Tony Sainsbury.

Chair: Welcome to the Environment, Food and Rural Affairs Committee. This is our first session on a new report we are carrying out in an inquiry on species reintroduction, which has had a lot of publicity, looking at species like the beaver, white-tailed sea eagle and even wolves and lynxes, but obviously it is a wide subject. The brief covers the role of keystone species, the regulatory framework for introductions, potential impact on current practices and benefits and risks of reintroduction projects.

We will also be looking at what is known as assisted colonisation, which was a new topic to me. It is basically that as our climate warms there may be species that did not live here historically, unlike the ones we reintroduce, but may well be suited to our climate and help build some of the ecosystems.

I will ask our witnesses to introduce themselves, starting on the left with Dr Katie Beckmann.

Dr Beckmann: Thank you very much for inviting me to give evidence today. I am a lecturer in wildlife health and conservation medicine at the University of Edinburgh and also a member of the Conservation Translocation Specialist Group of the International Union for Conservation of Nature, or the IUCN.

Professor Brazier: Good afternoon. I am Professor Richard Brazier. I work at the University of Exeter in the Geography Department. I also direct the Centre for Resilience in the Environment, Water and Waste, which is a research centre set up to try to understand how we might address some of the issues we are currently challenged with in the water cycle.

Dr Dalrymple: Hi, everybody. My name is Dr Sarah Dalrymple. I am a Reader in Conservation Ecology at Liverpool John Moores University. I am also on the IUCN Conservation Translocation Specialist Group, and I co-authored the IUCN guidelines that came out in 2013. I also co-authored the Scottish Code for Conservation Translocations that came out in 2014 and I provided comments to the English code that came out in 2021. I do lots of work with practitioners on reintroductions, but also my research is on climate change impacts on conservation and how we might use conservation translocations to combat climate change as a threat.

Dr Sainsbury: I am Dr Tony Sainsbury. I am from the Institute of Zoology, Zoological Society of London. I am a wildlife vet and I lead a disease risk analysis and health surveillance team at my institution that works with Natural England to monitor the health of reintroduced species.



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Q1 **Chair:** Thank you. You are all very welcome. We really like scientists because we get facts rather than opinions, which is basically what this Committee is all about.

I will start with the exam question you would set your students: what are the benefits and risks of species reintroduction? I will start with Dr Dalrymple because she was smiling when I said that.

Dr Dalrymple: I will stop making eye contact then.

The primary benefit of species reintroductions is for species recovery, but we are looking at species recovery for threatened species, so there is some sort of conservation rationale for it. Therefore, we are looking at things that are in decline and becoming rare or threatened in some way.

A big part of species reintroduction might also be ecosystem function, where we have an ecosystem that is missing some of those key processes. That might be pollination or something to do with nutrient cycling or those different functions within an ecosystem. We can use the movement of species into a new location to fill that gap from a functional ecology point of view. There are also wider socioeconomic and cultural benefits that should not be glossed over.

As a scientific discipline, you find that most practitioners of species reintroductions are coming from a natural sciences background—people like myself who are ecologists. That is changing, luckily, and it does need to change, but that is where we come from.

There are risks that the translocation or the species reintroduction does not work, so there is a risk to the individual plants, animals or fungi you are trying to move. With very threatened species the processes can be quite stressful, so if you are going to lose any of those individual animals or plants during the translocation process that is a big risk. There are also risks to the ecosystem where you are moving the species to. You might be moving in diseases, pathogens and things like that, and colleagues can talk more about that. You might be moving species in that somehow disrupt an ecosystem as it is, especially when that species has been missing from that ecosystem for a long time. Ecosystems tend to hit an equilibrium and you might be disrupting the stable state.

Q2 **Chair:** If there is a species that is abundant elsewhere but disappeared from our shores generations ago, is there a case for reintroducing it for reasons other than conserving that species?

Dr Dalrymple: There could be. To begin with, we think of species as being threatened either globally or regionally. With certain populations of species that might be common on the mainland of Europe but we have lost them from England, we have a responsibility to move them back in or at least to address any range contractions. If we are on the edge of the range for the species that is on our patch. There also might be the ecosystem functioning reasons I mentioned. That is increasingly becoming a more important rationale for reintroductions.



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Professor Brazier: I will add to that. All of our ecosystems now are modified by humans. Therefore, there are reasons for moving species back into the ecosystems to restore the structures and functions we have lost by extirpating certain species. As an island nation, of course, those species are not necessarily going to get into the places where they previously were. Species reintroduction can be a way of overcoming some man-made barriers to get the ecosystem structure and function back. Now we understand more holistically, let's call it the natural capital of our environment and the way in which species reintroduction can play a role in enhancing that, we can have strategic goals to improve our natural capital via species reintroduction. That is one of the major benefits I consider.

To add a risk, it is related to the conflict that can occur. In a country such as the UK where we lost particularly some keystone species hundreds of years ago, we are not returning those species to the same ecosystems. Therefore, there can be conflict between humans and those species and also between humans and other humans.

Q3 **Chair:** The apex predator, like the wolf, is not here, so if we introduce something that does not have its natural predator the numbers could get out of control?

Professor Brazier: We have proven to be very adequate natural predators of pretty much all species on the planet. In the case of the absence of predators or apex predators, we need to fulfil that role through management. There is lots of detail about how you manage reintroduced species that we have learned from overseas.

Dr Beckmann: I will echo the comments of the other witnesses. I will also highlight that every reintroduction is different depending on the species that is being reintroduced. We are talking particularly here about keystone species, but there is a huge range of species of plants, animals and fungi that can be the subject of reintroduction programmes. For each species—and even for any translocation of a particular species—the risks and benefits will be very particular to that particular reintroduction project.

Q4 **Chair:** Dr Sainsbury, do you have anything to add on this exam question?

Dr Sainsbury: Yes. I want to concentrate on the risks—disease risks in particular. They tend to stem from the fact that every time you move a living organism from one area to another you are moving a whole biological package. If you think of the biological package as a bit like a pomegranate and all the seeds are species of parasites, we are moving pomegranates from one area to another and we are moving these parasites. I like to think of parasites in the ecological sense: viruses, bacteria, fungi, protozoa, worms, tapeworms and so on, all of those as parasites being moved. There is a risk that whenever we move a living organism from one area to another we are introducing parasites that



species at the destination do not have immunity to, so there is a risk of severe disease outbreaks.

There have been some marked and severe disease outbreaks that have occurred with translocations. One that is close to our home is the introduction of squirrel pox virus by grey squirrels. Grey squirrels were introduced by the Victorians to adorn their natural parks in the 19th century. They introduced the squirrel pox virus, although that was unbeknown to them. Ever since 1870 it has been decimating red squirrel populations throughout England and Wales, and it is up in Scotland now. There are still epidemics of that disease occurring. Over the last 150-odd years this epidemic has spread from England through Wales to Scotland. That is an example of the severe disease risks of carrying out reintroduction.

Another good one is chytrid fungus, which has been introduced to amphibian populations throughout the globe through wildlife trade—illegal trade possibly. That has led to amphibian extinctions. Several species of amphibian have been made extinct through contact with chytrid fungus. That is a severe representation of the risks of carrying out species reintroductions and one that we need to be careful about.

Q5 Chair: We need to be very careful indeed. Indeed, wild boar spread African swine fever, which has been a massive problem on the continent of Europe. We do have them here, but obviously not as widespread as elsewhere.

Species reintroductions is just one of the many types of conservation translocation. Is the Government's focus on species reintroduction the right approach? Who would like to kick off?

Professor Brazier: I think it is, especially in the context of the species we have lost or degraded due to habitat destruction. In the case of a number of our keystone species, we can only get so far by improving habitat if we do not bring those species that have evolved over millions of years to make habitats resilient. If we do not bring those species back we will not bring the set of functionalities that our habitats are missing.

That said, species reintroduction is just part of the wide range of nature improvement and nature recovery tools we need in our toolbox. Personally I think the reintroduction of keystone species is one of the key tools in that toolkit. Without it we will effectively be gardening as conservation practitioners. We need these animals that are, ironically, much better evolved and adapted to do some of the habitat reconstruction work. We need them to do it for us and on our behalf, at scale in a large number of spaces, as Professor Sir John Lawton identified in 2010, and we need them to do it rapidly. Twelve or 13 years ago, this concept of making more space for nature was concluded as being the right thing to do. We have not made a lot of progress doing that. Reintroduction of keystone species is one of the most rapid ways we can make that progress.



Dr Dalrymple: I agree with that. If we wanted to rely on habitat restoration, if that was our focus instead of species reintroductions, that would not be enough. That is especially so in the UK where our natural—nothing is really natural any more but as close as we have it—habitats are so fragmented. Again, it comes back to the Lawton review. We need things to be more connected. Unless we achieve more connected habitats the threatened species and the things we have lost cannot return and cannot move through the landscape. Effectively, translocations become a deliberate dispersal, so humans are intervening to help with the dispersal that those species could not achieve on their own. We cannot just rely on habitat restoration, the two things absolutely go together.

I work on a project in the Greater Manchester wetlands, between Salford and Warrington. We are putting species back that are in little isolated fragments of peatbogs. They are invertebrates and plants, and they could not get to those restored habitats without our intervention. It is definitely something we should place great importance on.

Q6 **Chair:** I will move on to this new concept—to me at least—of assisted colonisation. We often read about certain birds that arrive on our shores that have not been seen for many years or rarely arrive. Obviously as the planet warms and as the climate, including the south of the country, becomes possibly more amenable to some species, and indeed as they may be displaced further south as it becomes too hot for them, what place do you think there is for assisted colonisation and what risk might be associated with that?

Dr Dalrymple: My research area is focused on whether reintroductions can work as the climate changes. The default assumption of a reintroduction is that the native range of a species can be made suitable and we can move things back into their former range. With climate change, because the shifting climate conditions that are suitable for a species are shifting northward for us—so generally poleward and upward—the range of threatened species is becoming more and more contracted because of those dispersal problems I was talking about earlier. Reintroductions to parts of the range should not be something we are considering because the range has got too warm or too dry or a combination of unsuitable climatic conditions.

Therefore, assisted colonisation comes in with respect to climate change. For some species, we need to start looking for suitable habitat that is not within what we call the indigenous, the natural or the native range, depending on which definition you are using. That means sometimes a quite close range, a hop into the next available woodland if it is a woodland species. In the scientific literature it is quite polarised as to whether people think it is a good idea or not. If people say it is a bad idea they cite introductions of invasive species that have become very problematic.

Q7 **Chair:** Is that is signal crayfish, and mink even, which have escaped from farms?



Dr Dalrymple: Yes. There are loads and loads of examples—think garden escapes like Himalayan balsam and things like that. They are usually intercontinental jumps that have been inadvertent or deliberate, but we did not mean it to escape.

Assisted colonisation is generally thinking about helping that range shift with the climate shift so it matches the suitable conditions. It can also be done if we are going to lose the range for other reasons. It is not just for climate change, but that is certainly the angle the literature has jumped on because a lot of people are very concerned with climate change.

An example is the Tasmanian devil. That is an assisted colonisation not for climate change. I do not know if people know, but they got a contagious cancer. People did not know whether they could control the cancer so they moved an uninfected population out to an island, whereupon the Tasmanian devils ate a lot of the penguins unfortunately. However, we kept the Tasmanian devil population without infection. Retrospectively people said that was a bad thing to do because they ate a lot of penguins and, retrospectively, we realised we could do something about the cancer.

That is an example of assisted colonisation where we have moved things away from the threat that we thought we could not control and retrospectively people are very critical about it. The decision was made in the moment to move things away from that threat. Climate change is similar, because it affects the whole of the range of the species so we cannot escape the effects of climate change and we cannot easily manage it locally. People are talking about that with assisted colonisation now.

Q8 **Chair:** Is the fact that we have the English Channel between ourselves and continental Europe a reason why we may want to allow species to jump that by helping them? I suppose naturally if we were joined on to Europe they would have moved into Kent, or wherever, naturally.

Dr Dalrymple: Absolutely, yes, to the climatically analogous places in the south-east of England. They were in France and now they are moving across the Channel. Those species would not be able to make that jump on their own, so that is why people are talking about assisted colonisation from mainland Europe.

Dr Sainsbury: To make a quick point—because assisted colonisation is moving species into areas they did not previously inhabit there are greater disease risks; the parasite point I was making earlier. It is more risky. There is a higher probability of introducing a novel parasite to a new area. Therefore, we need to be more careful about carrying out a disease risk analysis, following it through and monitoring the species after assisted colonisation.

Q9 **Chair:** We have been talking in the main about animals, but obviously plants can also be reintroduced. We have seen with some of our tree species how invasive fungal disease is and insects have caused major



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problems. They have not been necessarily introduced. It may have happened naturally or by importation of animal matter or material. We are hoping that this report will look at plants as well as animals. Are there any specific issues relevant to the plant situation as opposed to animals?

Dr Dalrymple: I am a plant ecologist by training. The issues are all very similar at the broad view we are looking at now. There are pathogen problems. There are problems with range contraction and with dispersal. We have to look at it on the case-by-case level that Katie was referring to and where we might get more specific problems coming with plants. They tend to be even worse than the animals at dispersing, so suffering worse from range contractions than the more mobile animals certainly.

Professor Brazier: I will add to that. The mobility, particularly of tree species, means they are not going to keep up with the pace of climate change, whereas some of the animals we might consider would be more mobile.

I would like to throw another point in here, which is about the ability of certain species—particularly the keystone species like the beaver—to restructure the ecosystem such that other species can survive more readily, particularly those species that require wetter conditions. When the beavers come into wet woodlands they will prepare those locations for plants and animals to be much more resilient to some of the changing climates we are experiencing. Therefore, if we are considering certain keystone species as animals that reset the clock on ecosystems, we might find that we do not need to do so much assisted colonisation work because we are getting another species to prepare ecosystems for the trees that like their feet in the water and need to be kept wet and the epiphytes and the lichens that live on those trees that would otherwise die out if the land was kept dry, which is the way we have engineered it.

Q10 **Chair:** It is interesting you mentioned beavers. I had a meeting with the Woodland Trust during the summer in Raincliffe Woods in Scarborough, which is one of the sites. They said that potentially one of the problems with beavers is that you introduce them in a particular area where blocking that watercourse will help wet the land, do all the things you just mentioned and also prevent flooding further downstream, but often the beavers have a mind of their own and might move to a different watercourse where the flooding is not of an area that you want flooded but may be farmland or even people's houses. How can we try to ensure that we do not have these adverse effects from introducing species, particularly beavers that are renowned for blocking watercourses?

Professor Brazier: Here we need to get into the idea of renewed co-existence. We are renewing our co-existence with this species. We had an existence in parallel with that species for hundreds of thousands of years. We have pretty well forgotten all about that and now we are starting to relearn. Of course, the answer is we simply put in straightforward management frameworks that are well demonstrated throughout the rest of the world. Those can be to encourage those animals to build dams in



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places you want them to—that is what leads to the localised flooding and all the benefits that accrue there—but also we can manage those animals out of those places. We can remove dams and we can translocate animals to places where they are more welcome.

In the US, there is a lot of work to restore degraded streams and rivers for salmonids, for the steelhead salmon, because rivers and streams have been damaged so much via gravel extraction. The way they have restored those streams and rivers is to put in man-made beaver dam analogues that the beavers then come across and discover. They build dams on top of them that retain the silt, slow the flow of the water and create nice deep cool pools for the salmon to live in. The results have been remarkable in the recovery of those species that co-existed for millions of years alongside the beaver.

Therefore, you can do some manipulative work. We are adept at doing that in many other countries around the world, to get the keystone species to restructure the landscape or for the ecosystem to function how you want it to and, critically, in the places you want that functional change. There are plenty of places where you do not want that functional change and there are plenty of management tools to stop that from happening.

Q11 **Barry Gardiner:** You have said it all. My question was about keystone species, their importance and how they can support the restoration of ecosystems. You just beat me to it.

Professor Brazier: I could talk all day about beavers, Barry, but there are lots of others that we do not even think about if you consider what forms our soils on a global scale. Yes, we have this weathering of bedrock to form soil, but we have earthworms drawing down organic matter. This process that the earthworms support is supportive of all life, terrestrial life for sure and really all life in general.

Q12 **Barry Gardiner:** How long does it take to create a centimetre of soil?

Professor Brazier: Thousands of years. Unfortunately in certain fields in the UK, especially where the ground is steep and we are growing crops like maize, we will lose a centimetre in one year or in one big storm event. Yes, there are the apex predators and, yes, there is the beaver; that is all obvious. There are lots of others that unfortunately we have degraded or removed from our ecosystems, especially with intensive agriculture. We should be thinking about using techniques like conservation agriculture, no or minimum ploughing—which has been proven to work in yields the world over—to bring those types of keystone species back up to the abundance we need them, in that case to form soil that is very much the building block of life.

Q13 **Barry Gardiner:** I was interested in what you and Dr Dalrymple were saying about the Lawton review—bigger and better and more joined up—and the way in which translocation or assisted translocation could help.



With specific reference to keystone species, you have outlined many of the benefits that translocation of key species can bring. Are there additional disbenefits from keystone species, or is there a greater risk if it is a keystone species that we need to be more mindful of as well?

Professor Brazier: One person's cost is another person's opportunity. One thing we have learned, especially in the River Otter beaver trial, is that for all the benefits that accrue, particularly to communities downstream, with water quality improvements and flow being slowed, there are costs, but they do not necessarily accrue to the same people who benefit. You have to think about that. The best way is by thinking strategically about your whole catchment, or ideally your whole country, and saying, "Where do we need these changes?" Change is not an easy thing for people to cope with, especially people who are managing the land, making their living from the land. To be confronted with, potentially, parts of the landscape being flooded for the benefit of the rest of society is not an easy change to cope with.

Q14 **Barry Gardiner:** The Environment Agency made that point very clearly in its submission to us.

Professor Brazier: Of course.

Barry Gardiner: They said that species reintroductions inevitably change habitats and generally are a disturbance that can increase vulnerability in the short term to invasive non-natives.

Professor Brazier: We have come so far in changing what you might call natural or semi-natural habitats ourselves. When an animal like the beaver comes in and pretty well overnight puts that water back on the flood plain that we have been trying to drain to improve it for agriculture for hundreds of years that is not an easy change to cope with, especially when it happens so rapidly. However, there are places where it is entirely appropriate for that to happen. Society can benefit and society, I therefore argue, can afford to in some way fund and support that sort of change. A very rapidly changing mind-set is required if we are going to make some progress in those areas.

Q15 **Barry Gardiner:** You mentioned how climate change is taking some of the areas of France and, in a sense, making the south-east of the English countryside more similar to what they would have been a hundred years ago. There are some non-native invasives that we might like to see, like botrytis cinerea, noble rot, for the wine-growing industry. However, is it legitimate to introduce things like that as well?

Professor Brazier: I am going to pass on that. That is a difficult question.

Dr Dalrymple: I suppose the definition comes down to whether you are talking about conservation benefit or not. People move crops and cattle and so on all the time. That is translocation. It is just not a conservation translocation. I notice in some of the submitted evidence that somebody



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made the point that millions of gamebirds are released all the time and that is not a conservation translocation because it is for a particular reason.

There are species that we have not seen for a very long time, maybe even since the last time the glaciers retreated, but we could identify a function that is not being filled at the moment. An example is the European pond turtle, where there is a trial release. At the moment it is in central and southern Europe and I think declining there. We have evidence that it used to exist in south-east England and now there is going to be a trial release, not into the wild but into an enclosed area, to see whether our climate has warmed enough that that species can breed now.

Q16 **Barry Gardiner:** But is there an ecosystem benefit to the reintroduction of that turtle?

Dr Dalrymple: Yes, because it is an aquatic that does not rely on breathing oxygen as the fish do, so it can cope better with turbid waters. It is an omnivore, I think, so it feeds on things within the water system. When we have algal blooms and deoxygenation and things like that in the water system, other species would be killed off and the turtles would not. There is nothing like it in our ecosystems. Before this proposal landed in my e-mail inbox, it had never occurred to me to think about turtles, but I think if we start exploring we might find that we make those ecosystems more resilient to climate change and threats because they will have more redundancy so we will have more safety nets when it comes to losing species.

Q17 **Barry Gardiner:** What are the keystone species of plants that we could see making a major difference to natural capital in the UK?

Dr Dalrymple: There are certain species, depending on which system you look at. I work on a genus called the cow-wheats, which are found in woodlands all over Europe, and I have done some studies to show that functionally they are very distinct. They are just that big and you might find a few hundred in a few square metres, but they are hemi-parasites as well; the seeds are quite big and they support a red-listed fungus in their own right. When you start burrowing down, a lot of species could be classed in their own local system as keystones or at least delivering a very distinctive functional niche that no other species could do. It is not necessarily about the scale of impact. The birch woodlands where they grow would still be birch woodlands if they did not have cow-wheats, but would not be as high-functioning and would not be able to support ant populations and some of the pollinating insects and so on if they did not have these species. That is one very specific example. The cow-wheats are my pet.

Professor Brazier: I will add more general point. If we consider one of our major environmental problems is caused by bare soil, especially in the very rainy parts of the years and especially where I live in Devon, it need not be the case that you take all the biomass off the fields and thus



starve the earthworms of their food source and lose a lot of soil to boot. If you start to grow perennial crops where there is cover and you bring in cover crops and maintain cover the year round, there is a range of plants that could be considered as keystone species. They give us the same sort of food and fibre yields. They may need slightly different management, but they do not need the herbicides and pesticides, the glyphosate, or the deep ploughing, all the things that cause environmental degradation. Especially as the climate warms and we get even better growing conditions for perennial crops, they are certainly the things that we should be thinking about.

Q18 **Barry Gardiner:** Which are the ones that we should be thinking about reintroducing or translocating?

Professor Brazier: There is a range of different types of grasses that are being experimented with in North America—I can also submit some written evidence on that if you would like—which we could start to grow over large areas of the landscape to cover the soil in the UK right now. I think it would be sensible to consider those approaches, because when we start to wean ourselves from reliance on fossil-fuel-based fertilisers, the herbicides and pesticides, which we will have to do, they are the types of crops that we will be able to grow and which will give us other ecosystem benefits.

Q19 **Mrs Murray:** Dr Sainsbury, you have not spoken very much yet so I will come to you first and then go to Dr Beckmann. How effective are the current Government policy and the 2021 England code and guidance in leading and managing species reintroduction?

Dr Sainsbury: The principal policy change that I would like to see is improved legislation to license all species conservation translocations. At the moment, only certain species require a licence to be translocated, and that means that a lot of species translocations have been conducted without best practice. Best practice was laid out in the English code for conservation translocations by DEFRA in the last couple of years. It is good policy and it guides species conservation managers through that best practice, which would include monitoring health and carrying out disease risk analysis before translocation. Far too many translocations being conducted at the moment ignore best practice and species are being reintroduced without any consideration of the risks of doing so. I am veering into the next question.

Q20 **Mrs Murray:** I will stop you there for a minute, because we do not want to stray into Julian Sturdy's question, and I will go to Dr Beckmann. Do you have anything to add?

Dr Beckmann: I am not best placed to comment because I have been working in Scotland for the last three years and I am not so familiar with the implementation of the code and guidelines. I refer to the written evidence from Natural England, which says some of the same things that Dr Sainsbury has just said. They would desire to extend the licensing to



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all forms of conservation translocation. Following my own practical experience of working on translocation in England, I support that recommendation.

Q21 Mrs Murray: It is an offence to release an animal licensed under the Dangerous Wild Animals Act 1976. Starting with Professor Brazier and moving along, is the 1976 Act still fit for purpose in this regard?

Professor Brazier: I do not think it is appropriate. The animals—wild boar, elk and bison—are more dangerous than their livestock counterparts. I think the legislation was written to apply to the movement and handling of zoo animals, but these are wild animals. We have already heard that there are plenty of free-living wild boar and there are lots of problems with them, but do we need to categorise them as dangerous wild animals? I am not sure that we do.

My second point is that the regulations as they are do not allow people who want to move species, especially keystone species, to do so at a pace that is faster than the degradation of the species loss. We unfortunately have a culture of delay at the moment where it can take up to a year to go through the best practice. Don't get me wrong—I agree with what Tony Sainsbury says about the need to be very careful, especially about disease risk, but we do not have the support to do this work quickly enough to ameliorate or deal with the problems that we have created.

Q22 Mrs Murray: What is your view, Dr Sainsbury?

Dr Sainsbury: There are some important parts to the Dangerous Wild Animals Act 1976, for example the provisions on caring for or the husbandry of dangerous wild animals in captivity, but the elements of the legislation that relate to reintroduction are not currently fit for purpose. From that perspective, I agree with what Professor Brazier said.

Q23 Mrs Murray: Do you have anything to add, Dr Dalrymple?

Dr Dalrymple: Yes, one point. I think the wildlife trusts have grazing herds, which they move around between nature reserves to do the conservation grazing to fulfil that ecological role. If instead of having stock such as cattle and sheep we could have wild herbivores moving through landscapes, we would not have to move sheep into woodlands to do conservation grazing, which seems like a massive logistical intervention.

Q24 Julian Sturdy: What are the consequences for those who do not follow the England code? Are they prosecuted? Does anyone know what the law is?

Dr Sainsbury: As far as I am aware, there are no consequences for not following the England code.

Dr Beckmann: I should clarify that only a minority of the conservation translocations that occur in England are required to follow the code,



because they are not the kinds of translocations that fit the requirements for having a licence. As far as I am aware, it is the conservation translocations that require a licence that are advised to follow the guidelines. That is one of the reasons why Natural England, in its written evidence, is recommending that a broader range of conservation translocations come under the umbrella of the licensing requirement.

Q25 Julian Sturdy: If there are no consequences I suppose you will not know about any breaches or instances where the guidance has not been followed and there have been serious outcomes. Is it tracked, is it looked at, is there any follow-up?

Professor Brazier: There is a good example from north of the border of beaver populations.

Julian Sturdy: That has been widely publicised, hasn't it?

Professor Brazier: The point to make here is that the Scottish beaver trial, which is licensed and you might say is above board, released a fairly modest number of animals. It was mapped out and there is still a fairly modest number of animals. Over the hill in Tayside other animals escaped, were released or in some way got into the river system and now there are many more of them, probably well over 1,000 of those animals living free in the wild. That means that those events overtook the events of the scientific trial to study the impact of releasing beavers in Scotland, so you cannot fully understand the widespread impact of beavers in that Tayside population because you have not studied them.

Q26 Julian Sturdy: Have there been no opportunities?

Professor Brazier: The studies that are being done now involve how the population has expanded, how it has been managed and how culling has impacted that population, but there is no before, no baseline understanding. Having said that, if you are thinking about the proliferation, abundance and spread of the colonisation of those beavers into the landscape, the illicit—if you want to call it that—reintroduction of beavers in Tayside has been far more successful than the licensed, above board Scottish beaver trial.

Dr Sainsbury: There are a couple of examples from where we have monitored the health of populations of species that have been reintroduced illegally, as far as we understand it, although in one case it is uncertain. It was a population of sand lizards in southern Wales. In that case, we detected an adenovirus that we suspect is alien to that environment and so could potentially cause some problems. We advocate monitoring those populations further.

The other case is to do with beavers. There have been plenty of unlicensed beaver releases in southern England, and we are now working with Natural England to monitor the health of those populations through disease surveillance. When beavers are found dead they are brought to the Zoology Society of London for post-mortem examination. We carry



out detailed analyses of their health, including looking for any non-native parasites that might be causing problems in rodent populations as a whole in England. Beavers might have introduced parasites that could cause disease in our native rodent populations.

Q27 Julian Sturdy: Who are the groups who are releasing these illegal beavers? I cannot imagine it is just the general population fancying releasing some beavers. Are they organised conservation groups, for instance, that are not getting the right licences? How is it happening?

Dr Sainsbury: That is beyond my knowledge. I don't think there is any monitoring to detect who is doing the releasing.

Q28 Julian Sturdy: Something has sprung to my mind as we have been talking. You might not be able to answer this, but obviously there have been incidents of the unplanned introduction of species into the environment, and I am going to use the example of mink that have escaped from mink farms that are now in the wildlife population in certain parts of the country and cause serious problems. Maybe we should know this but I don't. What are the consequences? Mink farming is not going on any more but were there any consequences at the time?

Professor Brazier: No, but the environmental consequence has been to hugely impact the native water vole population.

Julian Sturdy: It has been massive.

Professor Brazier: It is interesting that in the River Otter trial we found that when the beavers started to make the flood plain full of water again, the mink were less able to prey on the water vole and the water vole numbers flourished, co-existing with the beaver again. That was a way of mitigating the impact of the mink, not just by culling them but by introducing another species that the water vole could have a symbiotic relationship with. They could co-exist. That was a very interesting additional find that we were not expecting and that gave us a little bit of hope for the recovery of the water vole, which is unfortunately soon to be lost from these shores if we are not careful.

Q29 Julian Sturdy: I suppose that evidence is fed into partners as part of the study.

Professor Brazier: Exactly so. We still need to control the mink, but that case gives us the means to start to recover one species with another and is another point on the keystone that is a lot more cost effective than a huge amount of mink culling, which is not easily done, although is perhaps still needed as well.

Chair: Sheryll Murray is going to ask about Scotland—we have touched on Scotland already. Dr Beckmann is at Edinburgh University and we have lessons to learn.

Q30 Mrs Murray: Yes, and I am looking to Dr Beckmann for an answer. What



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lessons can be learned from the Scottish approach to regulating reintroductions?

Dr Beckmann: First, I am happy to summarise what I am aware of, but I should refer you to the written evidence from NatureScot, which will have much more detail. If you want clarification about any points, I recommend you contact NatureScot for further details.

In Scotland, as in England, lots of conservation translocations and reintroduction projects have occurred and are ongoing and planned. Scotland has a lot of experience with these projects. NatureScot, which was previously called Scottish Natural Heritage, produced code and guidelines for conservation translocations, which Dr Dalrymple was involved in authoring in 2014. Generally, including within the scientific community and practitioners, the guidelines are well regarded. They are accessible and practical and they provide a good framework for planning conservation translocations. One of the key benefits of those guidelines and one of the reasons they have been particularly successful is that they were the product of the National Species Reintroduction Forum, which was established in Scotland more than 12 years ago.

The guidelines and the code on conservation translocations were a product of the forum, which is a collaborative stakeholder forum involving a diverse range of stakeholders from a range of backgrounds, including Government agencies, conservation organisations, land-owning groups and hunting, fishing and sporting associations. The guidelines represent a consensus of all those organisations on the considerations that are important not just for planning a conservation translocation but considering in the first place whether it is the most appropriate course of action or whether other conservation measures might be more appropriate.

The code and guidelines that the forum has produced are probably the first examples of a country-level implementation of international guidelines that were first produced by the International Union for Conservation of Nature. They are a very good example of international guidelines applied to the country level and those Scottish guidelines have now been used and adapted for the English code.

Q31 **Mrs Murray:** Are you satisfied that enough health monitoring is taking place after a species has been reintroduced?

Dr Beckmann: As a vet who has been involved in numerous conservation translocations, there is a recommendation to do what we call a health risk analysis or disease risk analysis and in parallel with that, related to that, is health monitoring. In practice, it tends often to be a last-minute tick-box exercise. It would be beneficial if health and veterinary considerations were included and wildlife-health professionals and vets could be involved right at the start of planning projects.

Q32 **Mrs Murray:** As a vet, what do you suggest should be put in place to



improve the health outcomes of reintroduced species?

Dr Beckmann: Having a wildlife veterinarian or wildlife health specialist on a project right from the beginning, from the conception of a project through. There are some quite well-established procedures for doing a disease assessment or health assessment in parallel with other risk assessments that you would do during the translocation planning. It requires a veterinarian or wildlife health professional to be part of the project team from the beginning.

Q33 **Mrs Murray:** Before I ask others if they have anything to add, are the lessons learned from previous species reintroductions across the UK accessible and shared widely? Do the four nations share that information UK-wide?

Dr Beckmann: In terms of results? That is certainly an area that a number of us on this panel would say could be improved. I know that NatureScot has appreciated that there has been a bit more communication recently and collaboration between England and Scotland in the production of the code and guidelines for conservation translocations in England working with and from the Scottish approach, which has been great. The written evidence from NatureScot and Natural England shows that they both appreciate that collaboration and we welcome and are open to even more and a more joined-up approach.

Q34 **Mrs Murray:** Dr Sainsbury, do you have anything to add?

Dr Sainsbury: Yes, two quick points. First many species translocations have been carried out with no health or disease monitoring. A benefit to improving the legislation and widening the licensing process would be to ensure that those translocations are carried out according to the code and are monitored.

Another beneficial thing would be increased investment in post-release health surveillance, because a lot of the species that we are talking about are small and because of their behaviour are very difficult to monitor after release. We do not know all that much about what happens to their health. Some increased investment there would be beneficial.

Q35 **Mrs Murray:** Do you have any additional information for us?

Professor Brazier: The capacity to do all the good work that is needed and has been referred to by my colleagues here is unfortunately lacking and that is slowing down the process of conservation translocation and the movement of species. Even within Scotland, because there was not enough capacity to put in place the necessary requirements under the regulations, regrettably we saw a couple of hundred beavers culled instead of being moved. Even within Scotland they could have been moved, but the capacity was not there to find the places and do the disease risk analysis and the sensible pragmatic work that would have enabled the movement of those animals instead of culling them. Ironically, dozens of those animals were brought to England, where it was



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somewhat easier to do the health testing and screening so they could be moved into fenced enclosures instead of putting them out into the wild in other river catchments in Scotland where they would have done good. That capacity must be built, otherwise we will be behind the curve again in nature recovery.

Q36 Chair: As you probably know, I am a farmer in North Yorkshire. Let's say that as part of one of my environmental land management schemes I want to introduce species—say the white-tailed sea eagle, although I suspect Yorkshire is not the best place for that—but I may have neighbours who are sheep farmers or have other operations on their farms that might be impacted. What is the current regulatory licensing approval scheme? How does that work at the moment and how could it be improved? Conversely, if my neighbour were to introduce beavers, I might be worried that they would come on my land and block my drains. Somebody said to me, "If we got beavers anywhere near here we would chop down all the trees near the becks". That is the sort of worry that people have. What is the regime at the moment and how could it be improved?

Professor Brazier: There is no national strategy in England for the reintroduction of beavers. Unfortunately, we have been waiting for this since the end of the River Otter beaver trial, which was about April 2020.

Chair: That sounds like a recommendation from our Committee that is starting to bob up there.

Professor Brazier: Absolutely, because with national strategy comes a coherence and understanding for your neighbours and yourself about what that means either to accept those animals on to your land and manage their activities accordingly, or say, "No, I am not interested. I won't necessarily take what could be an ELMS payment to make space for water and nature and could be a top-up payment if you introduced the beavers there". Without that national strategy, we are in a bit of a vacuum and we are not moving forward. In the meantime, as very mobile animals do, beavers are moving from catchment to catchment from the River Otter or from the catchments in Kent or from wherever else they are, and that isn't being regulated.

It is not just for beaver, but having coherent national strategies for the reintroduction of a whole host of species, that can do this country and its natural capital a lot of good, has to be top of the list, with all the disease risk analysis and the appropriate support and capacity for that. I think then you would find, with appropriate ELMS payments to your neighbouring farmer to benefit from the occupation of beavers in the streams and rivers, that it would not be considered to be too much of a problem.

Dr Beckmann: Again, I refer you to the example of Scotland. NatureScot produced in September last year a Scotland beaver strategy. That has a coherent vision for beaver conservation in Scotland for the next few



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decades, and reintroduction is one important tool within that kind of framework that is being proposed.

To say something else that we have not covered so far, in my mind, and also I can see in the written evidence from some Government agencies, it is important that we recognise that reintroduction is a tool rather than an endpoint and goal. It is one tool in the conservation toolbox, but it is important to have good coherent strategies in place for habitat and species conservation, particularly for priority species. Then to recognise that within that framework there will be a number of different conservation measures appropriate for a particular species, of which reintroduction might be one for certain species in certain situations.

Chair: Thank you. Dr Sainsbury, I think you were indicating you wished to say something.

Dr Sainsbury: Yes. I was just thinking that some of your colleagues up in North Yorkshire might have experienced the translocations from a different perspective. They may have been releasing animals for hunting purposes, like peacocks and partridges and so on. In many cases, they are exotic species. They carry avian parasites and harbour those. Therefore, in ecosystem health and the disease risk to ecosystems, they are of as great an importance as species reintroductions. It is something that we need to investigate in more detail if we are to get a very good understanding of ecosystem health as a whole in the UK.

Chair: Understood. Of course, a lot of farmers are using various grazing species to try to manage their land. We had some Exmoor ponies on our farm at one point, which was quite alien to North Yorkshire at least. They did a great job in managing the grassland where they were, so there are obviously pluses and minuses.

Q37 **Barry Gardiner:** We have a code but there are no penalties for not following it and nobody reports on it. We are just about to have the meeting of the taskforce tomorrow, in February. It is not clear who is on it or what its remit or its terms of reference are. I think you are on it, Dr Dalrymple.

Dr Dalrymple: Yes, I am on it.

Barry Gardiner: I don't think the full breakdown of who is on it has been publicly released, so you are probably the best person to ask: what do we want from it? What are you hoping to achieve through it?

Dr Dalrymple: What we have had is that we will be an advisory group to help support current and future translocation proposals. I know the membership is very well placed to comment on technical aspects. There are quite a lot of people, like me, who are ecologists or conservation biologists by training.

I hope that we could adopt some of the same rules as the National Species Reintroduction Forum in Scotland, the difference being that, as



Katie said, when we were having the forum meetings, when I was up in Scotland, all of those different organisations that submitted evidence for this inquiry—I have the code here from Scotland—were represented. All their logos are there next to the RSPB, all the usual suspects in the conservation world.

At the moment, the membership for the DEFRA taskforce does not look to be representative, so we will have to work quite hard, I think, to try to form some sort of network or consultation-type group that represents all those bodies. There is such a breadth of submissions to this inquiry, it really shows who is concerned about translocations. I think the group needs to take all those things on board so that all the groups feel like they are listened to and are being consulted.

Q38 Barry Gardiner: In comparing the establishment of the taskforce in England versus in Scotland, are you saying that there has been less of a desire for transparency and consultation and openness?

Dr Dalrymple: When the English code came out it wasn't made so obvious, but the English code was done in consultation with lots of different bodies. I was brought on—like I am here—as an academic person, but I know there are conservation organisations and landowner organisations. They were all consulted. The difference is all the logos went on to the back of the Scottish code but they didn't get a mention in the DEFRA code, so it is hidden. Actually, there was consultation and there was transparency to some degree, but then it got buried, which is a shame, a missed opportunity I think. The Scottish code is a document that represents the consensus and everyone around the table put aside their agendas to a certain extent, or at least respected one another's agendas.

We knew that the National Farmers Union representative was there to represent the farmers, and we all acknowledged that and it was all very transparent in the production of the code. The DEFRA code had some of the same organisations contributing, but it doesn't look like it. I think that is quite important. If somebody comes to the English code new and says, "Well, this is just a DEFRA document" it is a missed opportunity because they do not realise there was the input.

Q39 Barry Gardiner: I am thinking about the recommendations that this Committee can make in our report. It would need to be more bold or assertive in saying how much consultation has taken place so that we get that message of consensus—you did not use the word "compromise"—out there, that this is something that we are doing together.

Dr Dalrymple: Yes, definitely. A recommendation could be for the DEFRA taskforce, right from the word go, to bring in all those organisations that contributed to this inquiry and invite them into some sort of consultative role. Maybe not on the Committee itself but have a meaningful role. They get to see proposals maybe or they get to



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comment on different aspects that their members wanted to. I think that is a very important recommendation to make.

Barry Gardiner: Perhaps being on the taskforce you could then write the recommendation.

Dr Dalrymple: Maybe.

Q40 **Barry Gardiner:** What are the terms of reference at the moment?

Dr Dalrymple: The documents that we have had so far are along the lines of—how to put it?—behaving with integrity. All the things that we have to sign up to as, effectively, a civil servant. The terms of reference haven't been discussed yet basically, so exactly how we are going to operate we are not sure yet.

Dr Beckmann: In time, it would be a benefit if it was possible for the England code and guidance to become a document that is produced or at least a product of the taskforce. It would be beneficial if it could evolve into something that the taskforce were seen to own or the stakeholder group were seen to have produced rather than DEFRA.

Q41 **Barry Gardiner:** It strikes me as odd that anyone would go on to a body without knowing what the terms of reference of that body were. In effect, you may have a broad idea of what you want to do, but you need to have a very clear idea of what DEFRA or the Government want you to do. Should we be making a recommendation from this Committee that the Government publish clear terms of reference for the taskforce and set out what they believe its goals are?

Dr Dalrymple: Yes.

Q42 **Barry Gardiner:** How confident are you that it will achieve the aims of promoting good practice, bringing people together to provide the evidence base for translocation and species reintroduction?

Dr Dalrymple: I think that there is a demand for that sort of advice, so I think it is a case of if we had enough profile and if our outputs or our advice, or however we end up operating can reach the right audiences there will be people who are very ready and willing to accept advice, and maybe it is a case of meeting the demand, that vacuum.

I talked to a lot of people who work in conservation translocations that would love to have some sort of directory. That came up in the submitted evidence as well, for a directory or some sort of hub where they could be put in touch with other people working on adder reintroductions or sundews, whatever it is. There is a real appetite for getting advice, sharing experience and learning from other people. If the taskforce can go some way towards meeting that demand, I think we will be fulfilling a very valuable role.

Professor Brazier: Can I add a quick point? We have done a lot of social science work, public engagement work, around species reintroduction.



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One of the key lessons from that that transposes to this situation is that right from the outset, before the taskforce launches and has its first meeting and minutes are made public, you have to have involved everyone. If you don't do that and you don't all co-create that vision for what you are doing, no doubt some organisations down the line will undermine that work. Then it is back to square one.

We have seen this time and again on the reintroduction of different species projects. If you don't engage early and educate through the engagement, you are in a position where you will be undermined. I make the recommendation that there is a return to the membership and the terms of reference for this taskforce to ensure that everyone is in the room.

Q43 Chair: Dr Sainsbury, I think you have already raised quite serious concerns about the threat or reintroduction of species with parasites and diseases, and the effect that might have on the wider wildlife in an area. How effective is the risk analysis carried out before these reintroductions and is post-risk monitoring ever in place? Could we do more to ensure that we do not introduce unforeseen problems into the natural ecosystem where we are doing one of these introductions?

Dr Sainsbury: My group has over 30 years' experience of monitoring the health of reintroduced species. We have developed our own method, which contributed to IUCN guidelines. We carry out a disease risk analysis before a species reintroduction takes place. Then we carry out disease risk management during the process of the reintroduction, and follow it through into post-release health surveillance. The method is published and we follow it for all species reintroductions that Natural England requests us to. We work in partnership with Natural England in carrying out that work.

We have introduced mitigation measures to try to reduce the risk from disease. For example, we have changed the translocation pathway for cirl bunting reintroduction between Devon and Cornwall. We have recommended that particular translocations are stopped entirely. That was the case for adder reintroduction in the Midlands. We have eliminated suspected alien parasites in the case of the hazel dormouse reintroduction and carried out various therapeutic regimes to reduce the effect of other parasites that act when species are stressed. When they have been moved they are often stressed and more susceptible to these parasites.

Q44 Chair: In these situations, are you automatically consulted, or others with your expertise, or are you pulled into the team doing this because they know that they can use your expertise?

Dr Sainsbury: I do not know that it is automatic consultation, but we have a partnership project under a memorandum of agreement with Natural England to monitor the health and disease of species that are



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going to be translocated. It does not rule out other veterinary groups helping in those cases.

Our understanding is improving, but the whole study of health and disease of wild animals is in its relative infancy if we compare it with our understanding of the health of humans. There are so many other species, of course—we work on invertebrates, fish, amphibians, reptiles, birds and mammals—and so to get that sort of knowledge is quite difficult and takes a lot of time. There are still, for certain, unknown parasites and unknown diseases that may be introduced.

Chair: We think there might be one up in the North Sea affecting crab and lobster, which our Committee has been very involved with.

Dr Sainsbury: Yes, that is possibly a good example of that being the case. Although we are doing our best to reduce the risk from disease, there is the possibility that one of these species reintroductions will introduce a nasty disease in the future.

Q45 **Chair:** Do you think, to that end, it would be helpful to have some sort of national reporting mechanism or a database that can be accessed by experts or the general public to see what is going on and maybe ring alarm bells? If some well-meaning landowner somewhere in Norfolk decides they want to introduce a species, or just fancies having a few beavers—you see alpacas and all sorts of things on farms that people fancy having—there might be a bit of an alert mechanism to think, “Well, they tried this in Suffolk and look what happened. You need to be aware of this particular risk.” Do you agree with that, Dr Brazier?

Professor Brazier: Absolutely. I think it would go beyond the disease risk right into the best practice, the optimal habitats and optimal management for a whole host of species. To be honest, most of the information exists, but as piecemeal studies or reports. It has not been brought together. A really positive action would be for Natural England, perhaps with the help of this species reintroduction taskforce, to think about how such a database could be built. It would be multi-layered and hopefully it would be spatially explicit as well so that we would understand where species are, where they are naturally expanding into and thus where reinforcements might be appropriate or, indeed, where no reintroductions are needed because the animals or the plant species are getting there themselves.

Yes, some sort of coherent national database would be useful. Of course that has to go hand in hand with a national strategy for all these different species, in my opinion. Both things are needed.

Q46 **Chair:** It sounds like there are two possible conclusions of this investigation: a database to enable people to see what is going on and, as you say, guidance as well.

Dr Dalrymple: I put it in my written submission, but there are quite a few examples of databases around the world already. Some of them are



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regional and some of them have a taxonomic focus, like a bird reintroductions database. I have worked with a few people who have put them together and the one problem we have had is that if they are seen to be static. They date the minute somebody is not updating them and then become just a snapshot of when somebody was resourced to put in the numbers.

Chair: Sounds like my website.

Dr Dalrymple: A database that can accept contributions from the people proposing the translocations is best. To incentivise that you might have some sort of output, which is really easy to do now, where they get the facts, figures and things that they had put into the database back out as a standard report or something like that, which might be badged. I am thinking about lots of different sorts of groups that might want to feed back to funding bodies and say, "We have done this and here are the protocols that we have adhered to". It would be of benefit to the people contributing as well. I think that is what we have to do.

If you insist on people contributing to the database without any incentive they will do it as a box-ticking exercise, but they might cut corners. We should be thinking about what is best for practitioners as well as how we can get the data. If we make sure that it is transparent so that people can log in and check, and have a map that is spatially explicit, that would be a good thing.

Professor Brazier: Making something like this open-source and open-access, where there is no paywall and it is not hidden, goes to the point about being honest and clear about where the species are, what you need to do to get them there and maybe where you should not reintroduce them. We are not very good at that in this country. We tend to hide these sorts of data behind paywalls. If we look across the water to the United States you see all of this information publicly available at the click of a button on a nice GIS map of where everything is, because in the first instance often that work is publicly funded to collect those data. It should be made publicly available. That would be a really nice way of coalescing and bringing together all the understanding that we have, and then helping to attack this nature recovery problem on a whole national scale.

Q47 **Chair:** Thank you. Dr Sainsbury, we have talked about pests and diseases, but is there a risk of genetic contamination? I know wildcats can hybridise with domestic cats. Are there worries that some of our native species could in fact lose their—I am not going to use the word "purity"—unique character because of other species that might hybridise with them, or is that a minor issue?

Dr Sainsbury: It is definitely an issue. It is not something that I am particularly up on so I don't think I can comment on it. Perhaps one of the others.

Q48 **Chair:** If anyone is watching who is an expert on this it would be



interesting to get some written submission on that, thank you. I know domestic cats can hybridise with wildcats and there is a worry that the wildcat population will cease to be as it has been. Did you want to come in on that?

Dr Beckmann: I can comment. This is the major threat that wildcats face in Scotland. There is evidence that there are no genetically pure wildcats left in Scotland and this is one of the motivations for wildcat conservation. It is also one of the hurdles of wildcat cultivation and of any reintroduction of wildcats, because of the threat of hybridisation with domestic cats.

To me, it is a good example of how a reintroduction project could fit within the umbrella of a broader species recovery framework that addresses these critical threats to species that are driving part of the overarching problem that is causing the conservation decline of a species. Reintroduction would be a tool within that framework, but you also have to look at the bigger picture and what the causes of those conservation threats are and then try to address those in parallel with reintroduction. A reintroduction is only going to be successful if there is a realistic chance of that population persisting once you have reintroduced it in the long term, which requires those threats to be addressed and managed in the long term.

Chair: Thank you. It must be a brave domestic cat that mates with a wildcat. I have this picture in my mind but let's not go there.

Q49 **Mrs Murray:** I cannot see my cats engaging or interacting with wildcats.

Farming practices have developed since some species went extinct in England. What adaptation will be required to allow co-existence with the reintroduction of species? We have heard about cats but what about farming practices?

Professor Brazier: I think that we have to be clever about the spaces that we allocate to nature and the spaces that we allocate to productive farming. It is not too difficult nowadays to think strategically, at the very least at the farm scale and ideally at the larger scale, to identify the areas of our farm landscape that are not particularly productive and might be incentivised to attract payments for storing water, storing carbon or enhancing biodiversity. These might only need to be 5% or 10% of our landscapes, particularly those in the riparian zones, and without impacting agricultural productivity at all. In actual fact, by reintroducing species that mitigate some of the offsite impacts of farming like soil erosion and diffuse pollution, we could have some win-win situations. The adaptations could benefit the farmers themselves and society downstream as it receives some of the offsite impacts.

Chair: We might be moving on to Barry's next question.

Barry Gardiner: He is doing it all the time, Chair.



Professor Brazier: Sorry, sorry.

Q50 **Mrs Murray:** What do you think the right balance between reintroducing species and maintaining agriculture production should be?

Professor Brazier: A little bit better than it currently is. We really intensified our agriculture, particularly with the inputs of inorganic fertiliser since the 1950s, and it was done for good reason—we needed to produce more food—but we have done so to the detriment of nature. Unfortunately, even the best farm landscapes are depleted in nature, whether that is biota in the soil, plants and above-ground biomass, or all these animal species that we know are threatened. The balance has to be to give a little bit more space to nature while being clever so that we can farm productively where we farm.

Q51 **Mrs Murray:** Who do you think should be responsible for the long-term management of species reintroduction?

Dr Beckmann: In practice, in the longer term, it is the landowners and land managers who are responsible for management of reintroduced species. This is not directly answering your question, but that really highlights the need for all these bodies and all these stakeholders to be involved in, as I say, the conception and then the planning of these projects right from the start. That is one of the reasons why it is really important to have this real stakeholder engagement, to have the broadest group of stakeholders relevant to a project engaged right from the start, because all of those land managers, landowners and Government agencies will be responsible for managing species in the long term. They need to be part of the planning process.

Dr Sainsbury: All the best translocations that we have worked on have been partnerships between various NGOs, Government and other organisations that are interested all sitting on the steering group and being able to contribute. Obviously a lot of different expertise is required in carrying out species reintroduction, so it is best to bring that all in.

Q52 **Mrs Murray:** Dr Dalrymple, do you agree?

Dr Dalrymple: Yes, I agree. I think DEFRA has a role in overseeing things because while we are working on locally explicit/spatially explicit projects, we need to have some national targets. Ultimately that would be DEFRA's job, but I agree with the partnerships and all that sort of thing.

Chair: If we can rattle through the last few questions we might be able to finish before the Division, which is not going to be at 4.00 pm as we thought—it is going to be later—so we might be able to do that.

Q53 **Barry Gardiner:** That is a challenge, Chair. Chaff, corncrake, farming practices—I want to ask you about ELMS, which you strayed on to, but why is it—these are public goods that we are talking about. I want to understand whether you think the balance is right between incentive and



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penalty. I found it very interesting that you said there is no enforcer and there is no penalty. If a building is in danger of collapse in the city, the local authority can go in and tell people to fix it because it is a matter of public benefit. They can go in and fix it and charge them for it.

Whenever we are talking about public goods that are in the natural world, the natural environment, and land managers, we never think that if they do it badly we are going to go in. But we lost the chaff population in England because farmers did not keep their stock outside during the winter. We have seen the demise of the corncrake because of harvesting practices. These are public benefits that we are losing. In hedgerows, yellowhammers used to be common as anything. Do you think the balance is right here or should we be looking to have more stick as well as carrot?

Professor Brazier: The balance definitely is not right, otherwise we would not all be sitting here talking about species reintroductions. We would not need to reintroduce some of these species that you have mentioned. I think we definitely need both. There is very little in the way of punitive measures that are applied if you lose soil or you degrade habitat, which then has an impact on aquatic ecology because that soil is in the river, or if you lose habitat for any of these ground-nesting birds because of ploughing right to the edge of your field boundaries or even right up to the water's edge.

If you are a custodian, if you are a steward of the land, as we are told farmers are, you have to respect and look after that land. If you do not, just in the same way you might be asked to repair your building, you ought to be asked at the very least to keep that habitat in the condition that you found it in and ideally pass it on to the next generation in better condition.

Q54 **Barry Gardiner:** What role is there for the environment land management scheme—the incentives that that will pay our managers?

Professor Brazier: It could be a game changer. It could make a huge difference if the funding went to the right places so that these small amounts of land that we are talking about, which were perhaps taken out of agriculture, became water rich, carbon rich, nature rich. It is a fairly modest amount, especially given the £3.5 billion that we used to give to farmers just to farm on the area, the basic payment scheme. It is a modest amount of money to do this in these small places.

It would be a very good way of spending public money because of these myriad benefits, but also because you are investing in the future. You are building your natural capital stocks and unfortunately, since the 1950s at least, we have been degrading, drawing down on our natural capital stocks by the way in which we have been farming.

Q55 **Barry Gardiner:** In preparing for translocation, is one of the uses that ELMS could be put to making those habitats suitable to receive the translocated species?



Professor Brazier: Absolutely. Doing that, just giving the space, allowing nature to come in, putting nature in those places that can restore the habitat, make it more resilient to climate change and all these other things that we are struggling to deal with, but we are not a species that knows how to behave in a resilient manner. Some of these species that have been around for 10 million, 20 million, 30 million years clearly are because they are still around, were it not for us, and they have learned and adapted and evolved to create resilient ecosystems. This concept for making this space for those species to do that work for us is an obvious one.

Q56 **Barry Gardiner:** Turning to Dr Beckmann and Dr Dalrymple, on the taskforce in Scotland how are they doing that, and on the taskforce in England how are you going to do that?

Dr Beckmann: I am not sufficiently well versed to comment, but there has to be an overlap between the conservation targets and land management targets, that kind of broad framework for land management and conservation somehow overlapping the reintroduction strategy. These issues can go hand in hand. I am not well placed to comment on ELMS, but I echo what Professor Brazier said that it could potentially be a game changer and certainly facilitate some habitat restoration. That will be a partnership for the reintroductions.

Q57 **Barry Gardiner:** Is there a role for the taskforce here in influencing DEFRA's implementation of ELMS?

Dr Dalrymple: Just off the top of my head, maybe there is a role in facilitating payments for habitat restoration by providing the authoritative view of whether that habitat would be useful for species recovery through reintroductions. There could be a role where we fed into it, but I do not know the mechanism of how that would happen. It is all very theoretical.

Q58 **Barry Gardiner:** Just so that I am clear on what you are saying, you would set out the sort of preconditions necessary for a habitat to be receptive to the translocated species?

Dr Dalrymple: Maybe to support an application where we could strengthen the rationale of an application for habitat restoration.

Dr Sainsbury: I want to make the point that the corncrake is a species that we were monitoring in collaboration. The evidence base for the reintroduction not working as well as it could is quite weak. They are a difficult species to monitor in the wild after release. They migrate to Africa, as you probably know, and they are very difficult to monitor.

Q59 **Barry Gardiner:** The problem is you do not know what is going on there as well.

Dr Sainsbury: A very good example of species where we need to improve our health monitoring practices after release.

Q60 **Julian Sturdy:** Should species reintroductions contribute to the



Government's biodiversity and nature recovery goals?

Professor Brazier: Definitely. There are vehicles now emerging, these landscape recovery areas, landscape recovery schemes—there are 22 of those, some of which I am involved with on the east Dartmoor and west Somerset landscapes. They could show exactly how structural recovery of landscapes leads to functional change of more species coming in and pave the way via the reintroduction of other species to make those landscapes even more nature rich.

Yes, I think it has to be integral otherwise it is not even the icing on the cake. We are not even going to get the top layer of the cake, we are not going to get enough of the species into these landscapes to make a real difference.

Julian Sturdy: Who else wants to have a go?

Dr Dalrymple: I do not have anything to add, I agree.

Julian Sturdy: Agree?

Dr Sainsbury: I agree as well.

Q61 **Julian Sturdy:** Can poor habitat connectivity be a barrier to that success or successful reintroductions and, if so, how can we improve that going forward?

Professor Brazier: It already is. This whole concept of a fragmented ecosystem is one that we exemplify probably better than any other country in the world. We have in Devon and Cornwall 570 fragments of this rush pasture that is unimproved grassland. It is a fantastic habitat for rare butterflies and stores a lot of carbon and a lot of water, but there are tiny pockets—an acre here and an acre there—so the marsh brown, the endangered butterfly, cannot move between these fragments.

I was reading in the news this morning about the ideas of enhancing lengths of hedgerows. If we take the arterial network of streams, rivers, and ditches across the countryside, we could use those as the corridors to facilitate the reconnection of all these fragments of ecosystems. We would enable that if we just pulled back a little from these riparian zones with our farming. Even if we did not do anything it would be enabled. We have created that connectivity problem and it is certainly one that we can solve quite easily.

Q62 **Chair:** On one of the aspects of ELMS money going to farmers, do you think that if, for example, white-tailed sea eagles are taking lambs, that compensation for farmers whose lambs are taken—who can prove the lambs have been taken, by the way, and they were alive when they were taken—should be part of that?

Professor Brazier: If they are, but there is scant evidence that that is the case. It tends to be mullet in the estuary or rabbit on the downs that these big birds are taking. I grew up on a small sheep farm when I was a



youngster. I can see that there is a fear that that might happen and that it could impact on your livelihood. But the evidence from Scotland, where I think the Roy Dennis Wildlife Foundation will tell you there is probably upwards of 100 white-tailed eagles now, is scant that they are having an impact on agricultural productivity.

If you step into the world of compensation you start to get people taking advantage of the compensation scheme. You have to be very careful how you structure that and the burden of proof must be appropriate. It may be appropriate for some compensation to flow, but I do not think the argument that compensation schemes need to be set up before the species are introduced—of course they are introduced to begin with in such low numbers—should be a strong enough argument to prevent the reintroduction of species like the white-tailed eagle.

Q63 **Chair:** Understood, thanks. Finally, should we be setting objectives and targets for reintroductions and, if so, what would they look like?

Dr Dalrymple: I think objectives and targets are a difficult one, and a number of the submitted pieces of evidence made this point as well. Setting targets to try to tick-box, “Yes, we have done that reintroduction, we have done that one”, may be not so helpful. But having something like the goals around nature recovery where species for reintroduction are a tool, as Katie said earlier, to achieving the bigger vision of a resilient environment, goes hand in hand with farming as well as more natural areas. I think that is the sort of goal and target that we can all sign up to. Then that is a shared vision among lots of different sectors of society, but if you start having targets and objectives just for, “We will reintroduce this many species back into England”, I think that would be quite divisive.

Q64 **Chair:** Would one barrier to that be the fact—at the moment it seems to me it is just an enthusiastic landowner who is keen to see that species on his or her land. You cannot look at a map of the country and say, “Look, I am in the zone where we are trying to reintroduce X, Y or Z species”. It seems to be quite piecemeal at the moment. Should we try to co-ordinate so that we try to say to groups of families, as part of the landscape scheme of ELMS, “You live in an area where we are trying to introduce this particular species, why not sign up?”

Dr Beckmann: We were talking about ELMS giving payments to farmers to prepare land for reintroduction, but another component could be managing habitat or restoring habitat to enable recolonisation by species that have been reintroduced at other sites for which those areas are potential areas for that population to expand into.

Q65 **Chair:** A “build it and they will come” sort of theory; make the habitat there first. Sorry, Dr Sainsbury, were you indicating?

Dr Sainsbury: When we set our objectives it is a good thing to build in a very long-term health monitoring programme after reintroduction, which would take an enormous amount of resources. The red squirrel example I



mentioned earlier shows that it can be decades before host parasite interactions changed as a result of translocations have their knock-on effects. We need to be aware that those sorts of changes can take many years, so build in the long-term monitoring.

Q66 **Chair:** I am aware that I have said “finally” once but finally finally, for example, wolves and lynxes, is there a realistic possibility that somewhere in the United Kingdom there will be a place where reintroducing these apex predators would be advisable or workable or sensible?

Professor Brazier: The lynx is an arboreal species, like the wildcat, like the pine marten. It will live in the woodland. If you go into the forests in the Alps and try to see these species you will not. They are incredibly good at hiding, especially from humans. There is no doubt, especially if you want to solve the deer problem—both the native and the non-native deer problem that is impacting the regeneration, especially of our deciduous woodland—that having an animal like the lynx in those woodlands would be beneficial.

Same as if you want to start to move the grey squirrels around and stop them chewing on all our regenerating trees, getting the pine marten into the woodland, which is where it will stay, is a good thing. If you have large blocks of woodland, it is perfectly feasible to accommodate animals like the lynx, the wildcat, the pine marten. Pretty much no member of the public would even know they were there. Wouldn't it be wonderful to see the woodland regenerating not because of what we are doing but because of what species that used to co-exist with those woodlands themselves were able to do again?

Q67 **Chair:** Do they kill badgers because it might solve some of our TB problems?

Professor Brazier: It is a good point. You joke about this, but we only have that middle guild—foxes, badgers, otters—that is all we have left. These upper-guild large approaches have gone. We have probably too many badgers and foxes. If we had some of these species back in the woods there would be natural control, as there used to be, of those middle-guild predators as well. It is yet another part of the jigsaw that we are missing. We end up, whether it is a good idea or not, culling badgers and shooting foxes, but there would be less need to do that if you had lynx and wildcat in your woods.

Q68 **Chair:** Does anybody want the last word on that?

Dr Beckmann: From an ecological point of view there is certainly a raft of benefits and those have been demonstrated scientifically in studies in North America where wolves have been reintroduced, for example. But it comes back to the social and economic context as well as the ecological one and whether society as a whole is ready to be accepting of those species being reintroduced. If it is not, once animals are introduced they face a range of threats, including persecution, for example, and lots of



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incidental threats from people like road traffic collisions and incidental trauma of other kinds as well. You need to make sure that society is ready for a reintroduction like that.

Q69 **Chair:** People pay big money to see big cats in Africa. We could reduce our carbon footprint if you just had to go to Kielder Forest or Scotland.

Professor Brazier: We expect other countries to host those apex predators so that we can go on safari. We are not fulfilling our part of the bargain there, are we? We have killed all our apex predators, but we expect other countries to still have them so that we can go and see them.

Chair: I think we will draw it to a close on that point. It is a very important point and certainly some farmers in the south-west would worry what is the net benefit of having lynx because they might help with the badger problem and bovine TB, but then they also might quite fancy a bit of lamb for their Sunday dinner as well.

Mrs Murray: I might come on a little safari on your farm.

Chair: I will conclude by thanking our witnesses. It is always great to have proper expertise from people at the very peak of their profession. We certainly heard a lot of very interesting and informative evidence. We look forward to further evidence sessions in this report. Thank you very much.