



Environmental Audit Committee

Oral evidence: [Invasive species](#), HC 913

Wednesday 29 January 2014

Ordered by the House of Commons to be published on 29 January 2014.

Written evidence from witnesses:

- [Defra](#)
- [CLA](#)

[Watch the meeting](#)

Members present: Joan Walley (Chair), Peter Aldous, Martin Caton, Katy Clark, Zac Goldsmith, Mark Lazarowicz, Dr Matthew Offord, Mrs Caroline Spelman, Dr Alan Whitehead.

Questions 78–166

Witnesses: **Professor Max Wade**, Chartered Institute of Ecology and Environmental Management, **Henry Robinson**, President, CLA, **Mark Owen**, Angling Trust, and **Chris Gerrard**, Climate Change and Biodiversity Manager, Anglian Water, gave evidence.

Q78 Chair: It is a pleasure to welcome all four of you to the first of two panels this afternoon. Thank you very much for coming along on this important inquiry on invasive species. I think it might be helpful if I say that we have a large number of questions to get through, then we are hoping to move on to a separate panel round about 3.15 pm. That might give you some idea in terms of keeping your answers short and sharp, too. That will help.

The acoustics are not always that good, so please try to project your voices so that the Hansard reporters can hear well. I would like to start off, following on from our inquiry last week, by asking each of you to identify for us the main impacts of invasive species on your organisations or members, so that we have a feel for the important points that matter to you. I do not know who wants to start off. Mr Robinson?

Henry Robinson: Thank you very much. On behalf of the CLA, we feel very much on the front line as far as invasive species are concerned because our members—who look after roughly half the land in the country—will be dealing with these on a regular basis. It is a very considerable amount of money, as you will well appreciate. The figure of €12 billion has been mentioned. I will give you three examples of what our members meet a lot. With the grey squirrel, there is a 10 million annual cost to trees alone, forgetting all the

ecological damage that they cause as well. Japanese knotweed particularly has been predicted to have an eradication cost of 1.5 billion; I stress “billion”. That is remarkable. The rhododendron is an aggressive coloniser and we are told that it is 11 million to eradicate that from one national park in Wales. Those would be my top three.

Q79 Chair: Okay. Any additions to or disagreements with that? Mr Owen.

Mark Owen: Thank you. From an angling perspective, up to 4 million people have gone fishing in the last two years. Angling generates £3.5 billion a year to the economy and employs 37,000. I have not met one angler yet who has not either met or encountered invasive species or is not very concerned about the prospect of more coming in or the spread of the existing ones.

The main species that we are concerned about is the signal crayfish, which is spreading hugely. I have been up to a stretch of river in Yorkshire where the only living thing is signal crayfish—no invertebrates, no fish, no waterweed, no nothing. They predate off each other. I do not know how long that is sustainable for. They will predate on fish up to three years old, right from eggs all the way through. You find rivers where whole year classes are removed and that is not sustainable for the fish stocks.

Floating pennywort completely covers waterways, particularly still waters. It deprives the water of oxygen and light and, again, that heavily impacts, if not eradicates, fish stocks.

Himalayan balsam and Japanese knotweed have already been mentioned. From a water perspective, they completely drown out the native flora on the banks. When they die back in the autumn, this causes heavy erosion and siltation on the waters, which again impacts on fish.

Giant hogweed is similar, but again we have public health problems here with anglers trying to access waterways and the dangers then of coming into direct contact with giant hogweed.

Killer shrimp is the last real big one for us, *dikerogammarus villosus*. I am sure my colleague from Anglian Water will talk about this as well. We have managed to keep it contained into four places in England and Wales. The risk of this spreading out and destroying native invertebrates, fish eggs and impacting on fish stocks is huge. Of course, we have more to come if they do arrive, sitting in Holland, the quagga mussels, the Black Sea gobies, and so on, which would badly impact on fish stocks.

Q80 Chair: Okay. Is that as comprehensive a list as it gets or do you wish to add to that? Yes, Mr Gerrard.

Chris Gerrard: From Anglian Water’s perspective, there is the cost of providing good quality water to our customers. Non-native species can impact directly and indirectly on that. Species such as zebra mussels can clog our intake pipes, which means we spend more energy moving water around and we have to spend time and money cleaning zebra mussels away. There are also indirect impacts. Himalayan balsam was just mentioned as causing siltation in the water. That is reducing the quality of raw water that we take into our treatment works and, therefore, again increases the costs to us in providing good quality water.

Professor Wade: The Chartered Institute of Ecology and Environmental Management, which has almost 5,000 members, deal with non-native species on a regular basis. One of the things to emphasise is that the list is a long one. I could add others, but it is a long list and that gives us quite a challenge from that point of view. I think, too, there is a willingness of professional ecologists to have a greater involvement in using their skills and experience to deal with them and that would go back to the beginning, in terms of preventive measures, rapid response and so on as well.

Q81 Chair: Mr Robinson, at the very outset you mentioned the £1 billion cost of all of this. Could you be a little more specific in how it is adversely impacting the economy of the sector that you are involved in?

Henry Robinson: On the land economy, we meet them in agriculture and on the riverbank. As always, the problem is early detection—vital—and early action, but some of the actions that one can take from one ecological point of view are good from one angle but detrimental from another. I am thinking of the control of giant hogweed on the banks of a river. It may be sensible to let the cattle eat it, which they will do, but from a different ecological point of view it is sensible to fence the banks of the river to keep the cattle out of the water and from breaking down the banks, silting and all the problems that arise there. We are divided on the best method of control; what is right for one part of the ecology may be wrong for the other.

Q82 Chair: You are divided on what the best method might be, but presumably you are united on the importance of the precautionary approach?

Henry Robinson: I think we would all understand that.

Q83 Chair: Okay. Therefore, coming on to the European proposed directive and the progress of that, do you think the current draft is sufficiently precautionary in respect of what is needed as far as the UK is concerned?

Henry Robinson: It is important that the UK does not take its eye off the ball on this as well. There is an EU draft, absolutely, and that is very important, but it is very important that the UK Government maintains this absolute vigilance on this programme as well.

Q84 Chair: How might that absolute vigilance pan out?

Henry Robinson: Early detection, so perhaps a crystal clear line of communication from the land owner to the body monitoring invasive species. I would not necessarily know what that is, and if I do not know what that is then I am sure that a lot of other farmers do not know what that is either. That would be a clear thing; if you see something, then you can report it.

Mark Owen: I am not quite sure which draft of the regulations. Do you mean the first draft?

Q85 Chair: I do not know. I am just aware of a draft EU regulation. Perhaps you can tell us how far advanced it is.

Mark Owen: It is quite a fast-moving feast. I was in Brussels all last week.

Chair: Then please give us an update.

Mark Owen: From the original proposals that the Commission put forward, it is 99.9% certain that the 50 species cap has gone. The Commission has said that they put that in

there because member states were concerned about the cost of implementing the regulation. Member states have come back and said, “We do not think the cap at 50 species is right and there should not be a cap”. Therefore, the Commission said, “Okay, you wanted a restriction because of cost. You are now coming back saying you do not want a restriction”, so I think the cap has gone, basically.

There are discussions going on about various derogations and what various member states are pushing at a Council level. I think the Council is a bit opaque as to what goes on as opposed to the Parliament, which is a bit clearer. We are concerned about where we get to with derogation. I believe there is a Parliament vote tomorrow as well. There is concern that, in an effort to try to get this through before the elections, it may well be watered down such that it is not fit for purpose. There is an attempt to try to get it through on the first reading before the European Parliament breaks for elections. We would be concerned to see a watered-down regulation just for that purpose. We think that any regulation should be fit for the purpose it is intended for.

Q86 Chair: Okay, thank you. Does anyone wish to add to that?

Chris Gerrard: I would say it is good to see that the cap has gone. It never seemed to make sense that there should be a cap on the number of species. If we can have a risk assessment on those non-natives to create a long list that would be extremely useful, and have a separate discussion about how and what resourcing should be required to try to manage those species. I gather there have been some potential changes to this issue of species that are native in some parts of Europe but not native elsewhere.

Chair: We might come on to that in a moment.

Chris Gerrard: That is extremely important. There are also some potential derogations that, therefore, would not require a member state to take action. I think there is some work to be done there to ensure that those derogations work in the way that they are intended to work.

Q87 Martin Caton: What do you see as being the main drivers of the growth in the number of invasive species in your particular sectors? Which of these drivers can we do something about?

Henry Robinson: If it is my turn again, it seems pretty clear to me that it is global trade. The example of the Asian long-horned beetle is that it came in on patio stones from China. These are unwanted passengers coming in with global trade. I understand the difficulty of the balance that has to be struck between restricting global trade and all the WTO regulations and trying to keep out invasive alien species.

Mark Owen: Yes, trade and a passenger of trade is certainly one of the key ones, which is why for some time Angling Trust have been trying to get the UK Government to ratify the Ballast Convention, which specifically puts into place procedures for ensuring that ballast water is not a culprit in transferring these organisms. It was also mentioned in the first draft of the regulation that the Commission put out. I am still at a loss to understand why Jamaica and France can ratify it but the UK Government cannot. You might like to ask the Department for Transport.

Chair: We will note that.

Mark Owen: Thank you. It is not only in the ballast water but also sticking to the side of ships, boats and so on. Certainly, for the ones that myself and my members are most concerned about coming in, apart from the ones we already have—which, as I said before, was the Ponto-Caspians—that seems to me the most likely pathway, coming across from Europe.

Of course, there is also the pathway of the public's lack of knowledge in releasing these into the countryside, not knowing and not understanding the damage that these can do to our environment. That particular pathway can and should be addressed by far better public information being out there.

Q88 Martin Caton: I take the points you make when you are welcoming the likely withdrawal of the cap in the EU regulation, but surely there does need to be some sort of prioritisation. We are talking about thousands of invasive species in Europe. Do you have any thoughts about how that prioritisation should take place?

Mark Owen: I think that is down to the risk assessment done at the time. That is why we have promoted the Commission's original suggestions that there should be a scientific committee that this is referred to, to ensure that this is done with rigorous science behind it. If you took those two into account, I think you would find that you would only have the most dangerous species to Europe on that list, and I think that procedure would deal with the perhaps more frivolous or lower-impact species.

Chris Gerrard: We would probably echo that sentiment as well. As a water company providing critical service with some key infrastructure, we are obviously keen to ensure that however that list is generated it recognises UK resilience in the water industry and understands that the impact of non-natives on supplying water services should be figured in the risk assessments.

Professor Wade: Listening earlier to the list of plants, clearly horticulture is a route of quite considerable significance and we do need to pay attention to that. We also need to think about how we spread these plants and animals within the country, and certainly ecologists and others working in the environment are following the lead of the Environment Agency. We move from one site to another, sometimes three or four sites in a day. We could be superb vectors of moving some of these things around and we do need to pay attention to that and the responsibilities that we have.

Q89 Martin Caton: Do you perceive any danger of well-established species not yet causing problems suddenly or gradually becoming invasive?

Professor Wade: Yes, there are many, many species that we have in this country that are breeding and established, of which a proportion will be tomorrow's Japanese knotweeds and grey squirrels. They are very hard to pick up on. It was mentioned at your first session, for example, that if we had passed Japanese knotweed through a risk assessment at an early stage we would have said, "No, it is not going to be a problem". Who would have thought that something that does not even produce seeds is going to be a problem? It is quite challenging, but, yes, we already have these sleepers—as they are called—in and among us.

Q90 Mrs Spelman: There is a small point I want to pick up on: ballast water. Back to Mr Owen just briefly. With the opening up of the Northwest Passage and the melting of the Arctic sea ice, do you see an additional risk to angling if we continue to be unsigned to the

Ballast Water Treaty, and perhaps more widely to the other organisations from the contamination in both directions?

Mark Owen: I certainly do. Any opening up of new trade routes is a potential pathway, no doubt, which is why we have been lobbying for some time now specifically about the Ballast Water Convention. As well as fresh water implications, there are marine implications. If you take, for example, the king crab, which is being farmed in Russia and has escaped from those farms, it is now busily munching its way round the Norway coast into the North Sea. That is another example.

Q91 Zac Goldsmith: I want to go back to the point that Mr Robinson made about earlier detection and early action. You have all partially addressed this issue to one extent or another already, but I want to look at how effective you think the surveillance framework for invasive species in Britain is and what, if any, changes you would bring in.

Henry Robinson: I do not know about changes, but I think the example I would use to show that the system needs to be streamlined is with the example of the Oak Processionary Moth, which is last year's example. Originally, it was a farmer/landowner job to clear up and they were not doing that very well. It moved to being a Forestry Commission job to clear up. They took it in hand quickly and remarkably efficiently and got the Oak Processionary Moth in retreat, if not under control, in a year and at half the budget that was put forward. The budget was £2 million and they got it in retreat with £0.9 million. In the early stage—and I have not answered your point about the early detection—it seems to me that there is a case for Government agencies at that stage.

Q92 Zac Goldsmith: Can we go back before the detection part and look at the border controls? For the Oak Processionary Moth there was a failure at the border. As far as I know there was no failure in relation to detection, but there was a big failure in terms of early action, which led to much greater costs further down the line than would have been the case if they had jumped earlier.

Henry Robinson: Yes, I agree.

Q93 Zac Goldsmith: What do you think can be done to improve the border control aspect? That is the first point, obviously.

Henry Robinson: Increased vigilance and more checking. Presumably it is a resource question for checking on borders, but I am not an expert on that.

Q94 Zac Goldsmith: Does anyone else want to add to that?

Chris Gerrard: Not on the border question but on the surveillance issue, this country does have a very rich history in biological recording done at a voluntary level and in co-operation with Government agencies. It is a massive, massive effort. Latterly in particular, this has been one of those things that is very difficult to resource. It is not necessarily a legal requirement to do so and it does rely on the goodwill of lots and lots of people at ground level. It would be good to see that effort better resourced in some way.

It would also be good to see greater co-ordination between the non-native species secretariat and others in making sure that everyone is aware of the key species that we want to alert, and how we can educate as many people as possible as to which ones we are after and what they look like. There are key users, like anglers, who are going to be experts at certain things and so we need to equip all of these sorts of people out in the countryside looking for these and alerting them.

Q95 Zac Goldsmith: I understand and I am going to come to the pathways in a second. Given that a large number of the most destructive invasive species were either introduced unknowingly, like the Oak Processionary Moth, or were at one point considered to be sleepers—to use Professor Wade’s term—how can you improve the surveillance and monitoring process when you do not necessarily even know what it is you are looking for? Take the Oak Processionary Moth. That presumably should have been on the horizon so perhaps it is not a good example, but things that were not already sounding alarm bells at the time.

Henry Robinson: What we would particularly like to see is the much more regular updating of the lists that are kept. I gather that the last one was done in 2008 and is due for review in 2014. We would like to see that being a living list that is constantly updated, and not just within the EU. It should be aware of global trends so that something coming in from outside is also flagged up early.

Q96 Zac Goldsmith: You are talking about a much more expansive list of species that could be of concern to this country but are not yet?

Henry Robinson: Yes, exactly.

Chair: I think Professor Wade wants to come in.

Professor Wade: Yes. We are excellent in terms of spotting these things when they arrive. As Chris was saying, we are almost second to none from that point of view. That would not apply to fungal pathogens and so on, but our natural history societies and people that have that sort of interest really do keep their eyes open. That is why they are interested in these things and on the whole they will find them.

I would like to suggest that we should also be trying to move into a different view of the way we record these species, to try to identify areas where there are none of these species, regions within the country where these plants and animals have not arrived. Almost negative recording is really important. Where you have got rid of Japanese knotweed in your borough or something like that, that is very important information. On the whole we are fixated on recording where things are rather than where things are not, and I would emphasise the “are not” bit.

From a local point of view, we have local action groups, but they are on a voluntary basis. We cannot rely hugely on those. If you look at countries like the Netherlands and Ireland, local authorities undertake surveys and keep databases through their staff or contracting that in. They have a very good idea of what problems they have but also what problems they do not have. Therefore, they can put effort into making sure that, should a particular species arrive in a particular borough or district council, then they are equally able to take a rapid response action at a local level as opposed to necessarily a national level.

Mark Owen: I would point out that killer shrimp was first detected by anglers and reported by anglers.

A lesson to be learned on the surveillance and monitoring side is to be open, so for one agency not to decide that it is its patch. As we have just been hearing, there should be a far better communication across Government departments and local authorities. Key is the stakeholders, the NGOs, and so on, and having them involved. This requires multitasking.

It is not just one agency or department that should be responsible for it. There should be pathways of reporting.

The other thing is that once we have found something there has to be the capabilities of early eradication and control. From my perspective, for example, the Environment Agency has been going through an eradication campaign on topmouth gudgeon, which requires specific skills in the use of rotenone and so on to be able to use it properly. The people concerned had to be trained in Norway and elsewhere. We now have that capability. We need to retain those kinds of capabilities for what happens in the future.

Q97 Zac Goldsmith: Thank you. We had witnesses last week—it sounds like you have already read the evidence—and concerns were raised about the slowness of the regulatory risk assessments. Do you think it would make sense to develop a bit more of a slimmed-down approach? Would that help or hinder the process? Do you share those concerns?

Professor Wade: I do not know about a slimmed-down approach. I think it would help to have a more efficient process. It is very much reliant on specialists and experts and their availability. They are busy people and I do not know that, in terms of remuneration, it is a particularly rewarding activity. There is quite a lot of work to do. Certainly, the expertise and the skills are there. The process is fairly straightforward. Having been involved in a research project a number of years ago on this very area, it was just hard work to get the information back in a reasonable amount of time.

Zac Goldsmith: Back from whom?

Professor Wade: Back from the experts. You are reliant on an expert on a particular plant species collating the information and going through the risk assessment process. If we could speed that up, that would certainly help the process.

Q98 Zac Goldsmith: How would you suggest speeding that up?

Professor Wade: Paying the people who do it some more money. I am afraid it is probably that simple. It is done largely out of a sense of responsibility because of the expertise that you have.

Q99 Zac Goldsmith: Can I quickly go back to the pathways? The proposed EU regulation requires comprehensive analysis of the pathways used by these invasive species. What do you think should be seen as the priority pathways?

Chair: Who wants to answer first? Professor Wade.

Professor Wade: I will make a start. I think it really needs to feed from the risk assessment. Once you have identified those species that you are going to put effort into dealing with, then it is those pathways that you need to address. I think as well we are clear there are certain pathways as mentioned in terms of horticulture. We have heard the aquatic pathways of things moving their way from central Europe in our direction. We know about those. We can keep an eye on them. For a new species and a new problem with a new pathway, then that would enable us to direct our attention at that particular pathway.

Q100 Zac Goldsmith: Does anyone want to add to that?

Mark Owen: That also brings in horizon scanning as well on pathways. I think we should have done a lot more on horizon scanning. That assessment in itself will bring about and light pathways. I think I have said previously in this session my concerns about pathways and managing those risks down. There is also a funding issue here and the research councils in particular I would hope would be redirected to look at funding research into this type of activity.

Q101 Zac Goldsmith: How big an issue do you think, from your point of view, from the point of view of our fresh waters, are the garden centres and a liberal approach to licensing?

Mark Owen: We have supported the voluntary approaches on it with “Be Plantwise” and so on. We welcomed the five aquatic plants ban. We are concerned that such a step took seven years to assess. I note and approve the ornamental aquatic trade’s increased communication on this issue on plants and so on. I think there is more because it is an education. At the end of the day, it is somebody from the public getting fed up with it in their pond and putting it into a river and elsewhere. I would like to see a lot of tightening up.

Chair: We must move on to Dr Offord.

Q102 Dr Offord: Thank you. Do you have any experience of what are likely to be the most cost-effective approaches to controlling invasive species that have already established themselves? I understand that Anglian Water already has initiatives surrounding killer shrimp.

Chris Gerrard: That is right. Killer shrimp was detected at Grafham Water in Cambridge in September 2010. Within about a week of the potential identification of that species, we had a risk assessment done. We had temporary control methods in place, which was about making sure recreational users of our sites were aware of the dangers. They had wash-down facilities, were told to check their kit, to clean it and to dry it. That is a quick, snappy, very useful educational message for all water users. There was also compensation flow out of Grafham Water into the wider environment, which we then had to stop and subsequently have stopped it permanently as well.

While there was quite an expenditure early on to establish all that, now it is working well. All of the users sign documents to say they understand the rules and it has now got to be a day-to-day event for the regular users of Grafham Water. That experience showed a quick response, educating our users, and making sure our wardens and other staff were well aware of the issues can reduce it to hopefully what will just be a chronic ongoing problem at Grafham Water and the three other UK sites where it is currently found.

Professor Wade: I would direct attention at what I see as a disjunct between where we need to be directing our efforts and where we are spending the money. As a consultant ecologist, the clients that I work for are spending millions of pounds particularly controlling Japanese knotweed. With many of the sites that we are involved in, I am not really sure what benefit that is having from the point of view of the issues we have been talking about. It has just become necessary to deal with this plant for various reasons. That money could be used much more effectively in dealing with other invasive species that are equally potentially problematic from an urban to rural point of view.

I see a mismatch and that is compounded to a degree with the voluntary groups dealing with trying to eradicate species—in rivers and so on. That has real potential but, again, there is no link there to a professional input. It is quite a complex process dealing with these species. It is not only necessary to have an intimate knowledge of the ecology and biology of that particular species; you need to understand the means of dealing with them. For example, in their own right they can have significant problems when dealing with chemicals, machinery and so on. There are a whole range of legal issues. It is a complex area and I think we need to use our resources more wisely—and also the money that we are spending, to make sure it is targeted more effectively.

Q103 Dr Offord: Do you two have any further comments?

Mark Owen: That is right. I think early eradication is the best way forward. Also there should be an acceptance by Government that early eradication might well mean what might be perceived as a large amount of funding now, but the longer-term benefits would outweigh that—rather than waiting for it to be established and for a bigger cost, as we have been seeing with some of these species that we have been talking about. I would like there to be an acknowledgement that it might cost a bit more, a lump sum, now, but you will benefit in years to come. That is all I want to say on that.

Q104 Dr Offord: Have your respective organisations been able to gather any intelligence or information from overseas examples where they have been able to identify and eradicate invasive species?

Mark Owen: Examples of where they have been able to identify but not able to eradicate. I work very closely with colleagues in the Netherlands on this and other subjects. There they have a whole range, particularly, as I said, the Ponto-Caspian, but Government has been slow—if not non-existent—in taking action.

Chris Gerrard: The water industry obviously collaborates across Europe, but I am not aware of any good examples where there has been some good experience learnt from Europe. Our experience, with both zebra mussels and with the killer shrimp, has suggested that we have led on novel science to understand these species to try to work out how we can best control or eradicate them.

Professor Wade: Just to add to the evidence that you heard at the first session, particularly in Australia and New Zealand it is quite normal to have a noxious weed or a noxious species officer as part of the local authority, whose task it is to keep an eye on and work with the community. On a particular visit I made a while ago, a privet order had just been issued within a certain area. Anybody who had privet in their gardens—it had been found that it was starting to become invasive—had to get rid of it. I was thinking if you did that in Chelsea, for example, there would be an absolute riot. But no, this was fine—there were no problems at all. People would get on and do it. There is a cultural difference; we need to work in that direction.

I think, too, that we could use our local authorities more effectively. There are some excellent examples in the city and county of Swansea in terms of dealing with Japanese knotweed, and the same in Cornwall where a planning application as it goes through draws attention. You have to declare whether you have Japanese knotweed on your particular property and then you have to produce a Japanese knotweed action plan in terms of how you get rid of it, an excellent way of resourcing and moving ahead in a constructive way.

Q105 Dr Offord: That helpfully brings me on to my next point, which is that Defra is taking a very cost-efficient approach in seeking that conservation groups should address the issue. Do you think that is enough to prevent invasive species or at least control them?

Professor Wade: I would encourage Defra to put more effort into the excellent work that the non-native species secretariat does. They could expand that, as you heard last time. I think there are only two and a bit people but the amount of work and co-ordination they achieve is huge. They could link into, as I was saying earlier, where money is being spent. There is willingness in UK plc to deal with these problems, but there is no guidance as to how to most effectively target that. I think that would be a particularly worthwhile enterprise to use the money that is being spent and spend it more wisely, basically.

Q106 Dr Offord: One of the questions I asked in our first session was about restoring environments to the conditions that they were before an invasive species took hold. I was corrected by being told that it is not always possible to remove them entirely, merely just to control them. Do we have enough knowledge about restoring environments or at least restoring them with the invasive species still in situ?

Chris Gerrard: I guess it does depend on which particular species we are looking at. If we are talking about terrestrial or marginal invasive species, like Himalayan balsam, I would say we are pretty knowledgeable on that sort of stuff. But we are still very unclear about what the ecological effects of certain aquatic species would be and, therefore, what one might best do to mitigate any damage done. I would say this country has a very long history of managing semi-natural habitats for their native wildlife across the piece: landowners, NGO sector. There is a good platform to build on but there is certainly a need for research to extend that into areas that we are less clear about.

Q107 Dr Offord: Would you say that there is a gap in the knowledge on the ecological information we have about invasive species?

Chris Gerrard: I would certainly say that there are gaps in knowledge. We found with killer shrimp at Grafham Water that very little seemed to be known about their impacts and what they do. There is definitely a need for us to work with research institutions to develop that, but I would say that we should think positively about that and what we do now and our competency as a country in managing our landscapes.

Professor Wade: I was going to say as a generalisation that we are just bad at undertaking that restoration. Chris is quite right; we know how to do it. As we are bad at the beginning of the process, the preventative rapid response, we are also bad at the back end. We are just glad to see that we have killed it or whatever and then to forget. Why not plant some more appropriate vegetation? Why not change the habitat or whatever to make sure it does not happen again? We tend to walk away at that stage. We need to build into our procedures—and you have put your finger on an important aspect—a restorative element, which, if nothing else, will help prevent it from being reinvaded in the future.

Mark Owen: I am trying to think of an aquatic invasive species that we have managed to get rid of and I cannot think of one. I was talking to the Environment Agency this morning about this subject and you might like to check with them. Certainly, for the topmouth gudgeon eradication programme, which is hopefully coming to an end shortly, what they are finding is that the more they are learning about rotenone, how that chemical is used and the effects of it, the more they can fine-tune to ensure that invertebrates and so on are not damaged by it, that it is specified by the fish and that once those fish have been killed

off then the water environment restores itself very quickly—surprisingly so. That may be an example.

Dr Offord: Okay, thank you.

Q108 Dr Whitehead: That example leads me directly into my specific question and concern. What restrictions on pesticides, rodenticides and so on that there are, have an impact on the ability to control invasive species? Is there a calculus between benefit on dealing with invasive species against particular issues that may relate to pesticides, rodenticides, biocides or whatever? You mentioned the topmouth gudgeon, presumably as an example of a targeted but potentially damaging chemical that may be used for this particular species but would presumably have to be very carefully applied. What sort of landscape is there as far as those issues are concerned?

Mark Owen: Certainly, regarding rotenone, which is a piscicide specific to fish—

Dr Whitehead: Piscicide, sorry. I will not use that too often, I do not think.

Mark Owen: —it breaks down very quickly in the water body after it has been used. As I said, the Environment Agency has been fine-tuning its experiences on the best way of using it and being specific. By the way, I am assuming that we have a derogation for the use of rotenone; I think we must have.

Regarding herbicides and so on, on the other side we are restricted on a European front with some of the herbicides and stuff that we can use. Europe perhaps might be more helpful with derogations on that front.

Henry Robinson: Can I give you an example of where Europe is not being at all helpful? In control of the grey squirrel, we are about to lose the use of warfarin at the end of March this year because of the entirely arbitrary figure of £500,000, which the Swedes came up with for relicensing warfarin. This is going to cause considerable problems with maintenance of our native woodlands, which are particularly at risk from grey squirrels. I have to say I think it is going to be a very severe problem.

Chris Gerrard: I am not qualified to talk in specific details about pesticides and herbicides, but we clearly have very stringent rules on drinking water quality with regards to the content of pesticides and herbicides. It is very, very important that we realise that emerging pesticides or herbicides that might be of use may be untreatable in current water industry technologies, and that creates a big problem in the supply of water. With water framework directive rules coming into force over time, we are less able to use end-of-pipe solutions for treating water and will need to work in the catchment upstream to prevent anything like that getting into the water in the first place. There are obviously clear issues to be mindful of there.

Professor Wade: We need to have a degree of flexibility in our decision-making process, particularly at that rapid response stage—for example, if it were grey squirrel that we needed to mount a rapid response against and we did not have a tool like warfarin available. If we use another example of a herbicide, for example, that is not allowed to be used in water, to kill and deal with that particular problem and achieve success balanced against the risk of having that species then spreading throughout the country, there is no comparison at all. Unfortunately, we do not have that readily available to us and it also

takes a long time to get a derogation, whereas what we want is a very—well, rapid gives you the sense of what needs to happen. There are quite serious problems from that point of view.

Q109 Dr Whitehead: How might that case be made? What sort of calculus would be entered into in terms of the benefit of the potential spread of the invasive species—for example, against the problems that might be caused by, say, the use of a particular chemical under particular circumstances?

Professor Wade: In most cases, one would hope there will be a risk assessment that will back up that particular species and its arrival and needing to deal with it, so you have an idea of the environmental cost if you do not deal with it. Then you would assess as compared to that the damage that would be caused by using something like glycol alginate, or whatever, to control that particular species. It may kill everything in that particular piece of water, but you need to make the balance. That needs to then be built into the rapid response procedure, which I think on the whole we are lacking in at the moment. We are not that rapid. We are not that organised. When we get better organised and get more rapid, then you would introduce that decision-making process as the calculus would say, “Yes, okay, no question, use it”, or, “Do not use it”. It is a decision we need to make.

Q110 Dr Whitehead: Is there a link between what we have in animal and plant health regulations and invasive species regulations in that respect? Do you think they need to be more coherent in that context?

Professor Wade: I think you need to be careful. There appear to be quite a lot of similarities and benefits, but bear in mind that one of the big differences, in terms of plant pests in the agricultural and horticultural forestry area, is that you have a direct source of funding to deal with them and it is well established. Whereas with a lot of the plants and animals we are talking about, everybody looks the other way when you say, “Who is going to foot the bill?” to deal with this particular reptile or plant or whatever.

Within horticulture and so on it is quite clear who deals with it and there are well-established procedures. The other big difference is that the numbers of species that horticulture, forestry and agriculture deal with are relatively small compared to the number of species that we are dealing with. We have large numbers of them. Just on those two grounds alone, it is quite hard to see common approaches because there are quite significant differences.

Chair: Mr Owen?

Mark Owen: I think that is covered, thank you.

Chair: Okay, fine.

Q111 Peter Aldous: Do you feel that the system for listing species on schedule 9 of the 1981 Act is working well enough at the moment? I am particularly interested in whether it is giving proper weight to the available scientific evidence.

Mark Owen: It is not one I am qualified to answer; in the fish world we have the illegal fish Act and the issue is covered through that. I will let my colleagues answer.

Professor Wade: I am happy to talk about schedule 9 in terms of the plant species, less in terms of the Wildlife and Countryside Act and animals. We have to be careful with schedule 9 because that is largely responsible for the Japanese knotweed chimera that has developed over the decades, admittedly alongside the waste regulations. Certainly, at the moment, there is a tendency with the extended plant list on schedule 9 for another industry to start emerging to deal with cotoneaster and various other species that are on schedule 9.

I think we are missing the point. Schedule 9 is there to guide us and push us to deal with plants that we are at risk from and we should be dealing with it in a more responsible and well-guided fashion. There is very little or no guidance on how to implement schedule 9, so if you are faced with a plant on your land that you may be at risk of spreading—cotoneaster would be an example—what do you do about it? Where do you take it? Does it become waste? In that case it goes down the Japanese knotweed route. If not, what do you do? There is poor advice.

In the production of schedule 9, the amount of consultation was disappointing. I do not mean to pick on cotoneaster, but cotoneaster was not a particularly well thought out decision. There are three species of cotoneaster on the list and there are probably only about three people in the country that can identify the 14 or 15 species of cotoneaster that we have. If it is not in flower or in fruit what do you do? You end up advising clients, “Well, you had better get rid of it”. Unfortunately, we are getting rid of cotoneaster left, right and centre, probably for no great reason.

Equally, there are some species on the list that you wonder, “Why did they put water hyacinth on the list?” It is not a particularly threatening species in the climate that we have at the moment—in the future, perhaps. Some of them do not have risk assessments done on them so there is no information to back that up. Perhaps I am not a great fan of schedule 9.

Q112 Peter Aldous: You are setting out the shortcomings of schedule 9?

Professor Wade: Yes, but if we could get it right it would be a useful tool. At the moment, we are not making the most of it.

Peter Aldous: Mr Robinson, your experiences?

Henry Robinson: No, I do not think I can add anything to that.

Q113 Peter Aldous: Do any of you feel a so-called whitelisting approach might be feasible—that is, could such a system be engineered that would not be overly bureaucratic or costly?

Henry Robinson: I think it very unlikely. Almost no listing system is going to be perfect, but I think a white list would be very bureaucratic. It would send the wrong message. I think a black list sends a much stronger message and that would be the right way to do it.

Professor Wade: I agree. I am wary of the whitelist approach just on the basis of how difficult it is to predict whether something is going to be problematic. Just look at the species of balsam that we have in this country. They are remarkably similar. Four of the family are very well behaved. It is just one brother who got out of control and formed the Himalayan balsam and is a right pain in the neck. How would you have predicted that?

Chris Gerrard: I echo those comments. We also have a changing climate and a changing environment, so something might be on the white list for a while quite benignly and then all of a sudden it goes. Tree-of-heaven was used as a good example at last week's evidence, sitting there happily. Zebra mussel did the same thing. A hundred years without any apparent problem and then all of a sudden off it goes.

Q114 Chair: Just before we leave this and move on, Professor Wade, you mentioned about the guidance and about some of it being non-existent. Could you elaborate? This is a week when the Government is getting rid of a lot of regulations and so on. How does that square with what I interpret—correct me if I am wrong—as a desire for more guidance and more explanatory notes?

Professor Wade: The absence of guidance in the case of schedule 9 leaves it up to the individual to make it up as they go along. Japanese knotweed is a classic example. The people who put Japanese knotweed on schedule 9 of the Wildlife and Countryside Act in the first place did not intend to happen what has subsequently happened. They did not see the demonization of a plant and a multimillion pound industry. If you had told them as they were sitting in the room that they were creating a multimillion pound industry of weed control, they would not have believed it.

Q115 Chair: You are saying it is not necessary?

Professor Wade: It is not necessary, no.

Q116 Chair: What would you do instead?

Professor Wade: What you would need is guidance to take a risk assessment-based approach. You have a species on schedule 9 that you have on your land. You are going to undertake management or development or whatever and then some guidance. The problem with cotoneaster is it invades into heathlands. If you are in the middle of Birmingham the chances of it spreading to a heathland site and causing problems is very remote, so your risk assessment starts to drop. If you are down in the Dorset area it is a different story. You can come to a sensible decision. In one situation you would do nothing and in another situation you need to be very careful. It is that sort of guidance that would help, particularly in relation to—

Q117 Chair: Guidance that you would expect to be provided by Defra?

Professor Wade: Yes, both in the generality and also trying to demystify the reason for some of them. I am sure the reason was very good for why some of the species were put on, but it is certainly baffling the ecological community and has done for a while.

Q118 Mrs Spelman: In the interests of time, I am going to roll my three questions into one. The proposed EU directive is designed to cover 28 member states, but you will be well aware that a species may be native in one but invasive in another and taking a whole single market approach creates its own problems. I wonder if you would like to comment on that, and whether you think listing the country of origin within the single market might help combat non-native invasive species.

Mark Owen: We have been looking at this in partnership with EEB and other European NGOs through the European Anglers Alliance. Certainly, rather than a derogation on this when the species is listed as one of EU concern, having it where it is native we feel is the way forward. It means that—shall we say—the member states can be very good at using derogations. Is that a polite way of saying it?

Mrs Spelman: Yes.

Mark Owen: We would favour their derogations being at the minimum. That would also mean that, while a member state in which the species was listed as being native would not have to eradicate, it would have to co-operate with other member states to try to prevent the species from spreading into other states.

Chris Gerrard: I agree; I was alarmed when there was a suggestion that species native elsewhere in Europe would not be within the scope of the regulations. It seemed crazy to us—these pontic-caspian, a south-eastern European species like the killer shrimp and zebra mussel, are a massive concern here in the UK. Allowing member states where they are native not to have to be involved at that level but to have to co-operate is absolutely essential for the regulation to be seen as credible.

Q119 Mrs Spelman: Yes. Country of origin labelling as a tool?

Chris Gerrard: Yes. That sounds a reasonable approach.

Mrs Spelman: Thank you.

Q120 Mark Lazarowicz: My question is how far the Scottish system of species control orders or something similar would be beneficial. I understand the Law Commission is opposing such a similar scheme. What is your reaction to that?

Mark Owen: Yes, again, in the fish world we are slightly different. In fact, we have the illegal fish Act, which gives the Environment Agency those powers. The Law Commission, when it reviewed the legislation in this area, said that it was fit for purpose and should not be touched. I am happy with that approach.

Q121 Mark Lazarowicz: Perhaps in answering you could also comment on how the fiscal penalty should be applied and how the responsibility or legal liability for such work will be allocated.

Henry Robinson: I think those are two separate questions. On species control orders, in principle we would support that. There needs to be a system of checks and balances and understanding of thresholds and the general level of the powers and the details that need to go into that, so that will be one angle. Your second question was about the what?

Q122 Mark Lazarowicz: Whether there needs to be some clarification of who is liable for the introduction of a species that ought to be controlled.

Henry Robinson: I do not think I know the answer.

Mark Lazarowicz: That is fine.

Chris Gerrard: I do not know the answer either, but I would say that it is obviously a crucial question, and how member states then ensure the delivery of action on the ground is something that we, as landowners, would certainly want to be very involved in. I can see there would a case for landowners to be actively involved, and the amount of involvement and the financial contribution required—there would need to be some strong conviction that that expense and time would be effective: who is involved and how many landowners are involved. Is that action plan really credible to persuade us to invest in trying to eradicate species on our land?

Q123 Mark Lazarowicz: The idea of a species control order—are you in favour of that or have you any reservations?

Chris Gerrard: I guess the only reservation to what I just said is about what any landowner should be expected to do. That needs to be work relative to the conviction that the activity that a regulated body—Natural England, for example—might be compelling us to do or requiring us to do. If there is a lot of conviction that it will be successful and we can see the benefits of doing it, then it will be—

Q124 Mark Lazarowicz: But the actual idea itself—are you opposed or supportive of the idea to have such orders introduced into England and Wales?

Chris Gerrard: I am neither in favour nor against at this stage. I am not against it.

Professor Wade: I am certainly in favour of the concept of application of control orders. I have certainly come across a number of instances—particularly where you have a concerted effort to deal with a particular species, let us say, in part of a river catchment—where there are one or two landowners who are just not prepared to take part. It negates the whole of the effort that everybody else has put into that. That even occurs in the urban environment, where a landowner on one side is attempting to deal with a Japanese knotweed issue, and the landowner on the other is not prepared to assist. As you all know, that now even extends to problems of getting a mortgage, so this does extend across quite a wide spectrum. That would be very helpful.

In terms of the legal side of things, my experience there has been that this just makes a lot of money for solicitors. It is very hard to prove these things, demonstrate them and underpin them, and it is a growing area within the legal profession in terms of trying to deal with mainly, again, Japanese knotweed issues—back to mortgages and so on.

Mark Lazarowicz: Given the time, I will leave it there.

Chair: That is fine. I will bring this part of our session to an end. We thank you all for your expertise and time and for coming along here today, so thank you very much indeed. We will move on to our second panel, if that is possible, please.

Examination of Witnesses

Witnesses: **Dr John David**, Royal Horticultural Society, **Martin Emmett**, Horticultural Trade Association, and **Dr David Bullock**, National Trust, gave evidence.

Q125 Chair: We will proceed straight away. I think each of you has just sat through the previous session, so you will have heard some of the evidence and you will know that we have some time constraints. First of all, can I welcome each of you and thank you for coming along? It is no surprise, in a way, that what we will be doing is rehearsing some of the questions that we have just been through, but with a separate set of witnesses. If I may, I would like to direct the first questions, just to give us a sense of how much of a problem invasive species are, as far as your own organisation is concerned. Dr Bullock, you might like to go first.

Dr Bullock: Sure. Thank you, and good afternoon. When you ask our rangering staff in our countryside properties, when they are outside managing those properties, how much of their time they are spending managing the habitats, they would say about half that time

they are managing vegetation and about half of that vegetation is non-native invasive species.

Q126 Chair: That is quite a lot.

Dr Bullock: It is quite a lot. For example, we know how much it costs to get rid of *Rhododendron ponticum*. On the flat on Brownsea Island, it is £4,000 per hectare. As soon as you take that management to somewhere like this, the steep slopes of Lundy Island, it goes up to £12,000 per hectare. In both places our objective is, for different reasons, to eradicate *Rhododendron* from those two islands. Yes, we do not underestimate the costs of managing for non-native invasive species.

Q127 Chair: Would you like to add to that, Dr David or Mr Emmett?

Dr David: Sure. At the RHS we have four gardens, so the impact of invasives on our gardens is relatively small. However, I would again draw attention to the *Rhododendron* that is generally known as *ponticum* as a source of disease, particularly in terms of *Phytophthora ramorum*, the sudden oak death pathogen.

More widely, in terms of our members, the Society has over 400,000 members, keen gardeners. There are the usual suspects in terms of the impact of invasives—what you do if you have a property with Japanese knotweed, for example.

Q128 Chair: Mr Emmett?

Martin Emmett: Thank you. I represent the Horticultural Trades Association, which is primarily concerned with the gardening industry and ornamental plant supply. Thinking specifically about nursery production systems, of course we get the direct consequence of the pathogen itself, which might be causing significant crop problems. If you look at Chalara, or ash dieback, we are talking about an industry worth about £2.5 million per annum.

There is also the consequence of the actions that we take to control them; we have destruction orders for which we receive no compensation. Most destruction orders would be for invasives that are a direct problem on our crops, so it is very easy to understand why they are happening. In other cases, the impact on our own crops could be somewhat indirect. There might be a pest that creates very little direct damage, but it might be that that, for example, is a whitefly that carries diseases that affect other crops, so we sometimes have destruction orders on ornamental crops. The problem could be relatively easy to deal with when it comes to the crop itself, but it could affect the habitats or other crops.

Then there are the costs of the plant health regime that we are operating in this country primarily to protect ourselves against invasives, which involves several inspections and the like.

Q129 Chair: That is helpful. Do either of you two wish to add to the list of detriments that Mr Emmett has just set out?

Dr David: I would certainly say that if you add in pest and disease issues as invasives—they do not fall within the strict interpretation of invasives—horticulture is affected by quite a few of those. Ash dieback has been mentioned, but there is also chestnut leaf miner, which came in at the beginning of this century, box blight and box tree moth

caterpillar, which is just coming in and spreading through. Those can have quite a serious effect on garden plants.

Q130 Chair: Yes, Dr Bullock?

Dr Bullock: Can I add an intangible? You can get quite a lot of costings done, but it is much more difficult to cost out the profound sense of loss of iconic native species due to non-native species, and also to the effects of *Phytophthora* and so on in our ornamental gardens, which are national treasures. There is an extra cost, a societal cost, to—

Q131 Chair: You feel that is not factored in sufficiently?

Dr Bullock: No. It is very difficult to do it, but we are very aware of it. We will try to factor it in, but it is not easy to put a cost on.

Q132 Chair: I want to try to speed up our session now, so brief answers please. Is the approach of the draft European Union directive sufficiently precautionary? Is it going in the right direction or does it need to do more? Perhaps you will take that on, Dr Bullock.

Dr Bullock: Pleased the cap is gone, and also very concerned about native species in the southern part of Europe travelling and becoming established as non-natives further north.

Martin Emmett: It is going in the right direction. It needs more regional emphasis, and we would like to see the trade involved in the process of developing such lists.

Dr David: I have a major concern with the European Union legislation insofar as it bans possession. We do not know what is going to be on that list and, with the cap having gone, we do not know how big that list of banned species is going to be. Not only are they banning in trade, not only are they banning in terms of planting in the wild—which nobody should even think of doing—but they are banning on possession. This will mean that innocuous plants could be affected.

Q133 Chair: Is that something that you would expect to see a UK Government in the ongoing negotiations to be taking up in advance of any confirmation of the draft directive?

Dr David: Could you ask the question again, please?

Chair: Yes. Would you be expecting Defra to be voicing some of the concerns that you have just expressed in the course of the remaining negotiations on the draft directive?

Dr David: My understanding is that the legislation is at too late a stage to address that particular concern.

Chair: Fine. Thank you.

Q134 Zac Goldsmith: Just on that last one of possession, what does that mean? For a garden owner, does that mean that it would become illegal to have that plant, although it may have been there for years?

Dr David: Yes, to have that plant. That is my understanding of the legislation.

Q135 Zac Goldsmith: But that would only apply effectively to plants that have been blacklisted?

Dr David: A list of Union concern, yes.

Q136 Zac Goldsmith: Sorry, I just wanted to clarify that. Kew Gardens, yes, quite. I just want to address this to all of you—perhaps starting with Martin Emmett. To what extent

do you think the horticultural trade itself is a key pathway for invasive species into this country?

Martin Emmett: I have heard that in your previous evidence it has been somewhat emphasised as a key pathway, and I felt that was a little bit unfair. If you look at the ash dieback, for example, that would almost certainly have got into the country wind-dispersed, in due course. In fact the whole biology of how it got into the country is still very much under debate. You looked previously at things like the Harlequin ladybird as well. Again, it would be another wind-dispersed pest problem. Yes, the horticultural trade has a responsibility here, but I do feel sometimes that we have been a little bit unfairly singled out.

Q137 Zac Goldsmith: Do you all agree with that? Do you have a comment on all that?

Dr Bullock: I agree. I think it is trade. It is not just horticultural trade. For example, stone imported to England from continental Europe, without any quarantine restrictions, can bring in non-native invasive species and diseases.

Q138 Zac Goldsmith: I do not think anyone is suggesting it is the only cause, and none of the evidence that we have had would suggest that, but there have been examples of where the blame could and should be placed on the shoulders of the horticultural trade. I am becoming a bit of an Oak Processionary Moth bore in this session—its home is in Richmond Park, which I represent—but I think it is accepted that that was almost certainly brought in as part of the horticultural trade into a centre in Kew, although not Kew Gardens. There are many other examples that we have been given. I wonder whether or not you might be downplaying it a little too much.

Martin Emmett: No, I do not think so. The Oak Processionary Moth, as I understand it, was probably not even known 20 years ago. It originated in Eastern Europe. If you look at its progression across Europe, I think you might have to conclude it would have eventually reached this country anyway.

Q139 Zac Goldsmith: That is a hypothesis, but the point is that it was not deliberately brought in. I believe it was brought in as eggs on a fairly mature collection of oak trees. I forget which country they were brought in from. Whether we knew about it or not, plants brought into this country surely need to be much more carefully vetted than they are. You would hope that the system would be in place to prevent the eggs of any caterpillar, any kind of insect, because we simply do not know what impact they are going to have. Would you accept that a failing of some sort that led to their being brought in, irrespective of whether or not they would finally make their way in 20 years from now?

Martin Emmett: Yes, it could be the case, but I would suggest that essentially what we have to depend on is a good plant health regime across the whole of Europe. In effect, if you look at the way European policy is going on plant health, it is trying to address problems at source. We have some new plant health regulations going through the EU. What we need to see is that we apply the same type of rigour to plant health in other countries—Mediterranean-region countries, for example—as we do have at the moment in the UK.

Q140 Zac Goldsmith: I am going to try to speed up because we do not have a lot of time, but it seems to me that within the trade there are certain areas that look much riskier than other areas. For example, this increasing trend towards buying very large trees with very

large root balls, full of earth, whose contents we cannot possibly really know. Given that all of those trees eventually are going to be growing in this climate, theoretically all of them could, therefore, be propagated in this climate. Do you not accept that there is a level of risk there, where the downside, the risk, exceeds greatly the upside of that particular aspect of the trade?

Martin Emmett: I agree there is a level of risk. I do not agree that the downside always exceeds the upside. It is fundamental to our trade. It is a very international trade. It is a very global trade. No, I cannot unconditionally accept that argument, I am afraid.

Q141 Zac Goldsmith: Before I move on, does anyone want to comment on that last point?

Dr Bullock: I would like to add that a lot of what we are going to be talking about is effectively down to behaviour change, and in the case of what you are talking about in terms of quarantine prior to coming to, for example, the UK from other places, we could negotiate a time to check plants that are not pesticided, so they are not masking diseases, that are quarantined prior to coming over here. We could then keep them in quarantine and do the same thing. There is still the risk that I come back to of inanimate stuff coming over, which harbours species of non-natives and also plant diseases—stone, in particular.

Q142 Zac Goldsmith: Can I ask again, in terms of other drivers, which are the significant drivers or pathways—however you describe it—specifically that we have a reasonable chance of being able to address? From a policy point of view, where should the focus be, in addition to what we have just discussed?

Dr Bullock: I would argue—we have said it many times—that appropriate risk assessments are in place to get priorities there. I think some of the priorities should be based on impact, and assessment-based on expert judgment, on urgency as well, and that of course based on expert judgment. Also then the instruments are available at the local government and central Government level to empower and enable action to happen very quickly. I think it is almost a Venn diagram of experts/scientists, citizens, early detections, and also state or local authority support. Without the three of them together, we will not be able to tackle it. The prioritisation process based on risk assessment is critical, and that is based on: what would happen if this species got loose? How urgently do we need to act?

Q143 Zac Goldsmith: Given the very long list of species in Europe that could be of concern to us or are of concern to us, how do you believe that action should be prioritised?

Dr Bullock: I think we can and should make good use of expert judgment. We have good enough experts to make lots of sensible judgments. They may be right; they may be wrong sometimes about what species are likely to be or what diseases are likely to be there. Horizon-scanning was mentioned earlier on, and I think there is great potential for that to be legitimised and used more forcibly in making some judgments. It is not based entirely on science; it is based on expert judgment.

Zac Goldsmith: Chair, I am going to stop because I am worried that we have a lot of questions and could end up—

Chair: I am concerned, because it is not clear to me whether or not there is going to be a vote at 4.00 pm. I need to gauge whether or not there will be a quorum afterwards if there is a vote, but we will move on to Mark Lazarowicz.

Q144 Mark Lazarowicz: Yes, thank you very much for taking up some of the themes of Zac's question. In terms of effective horizon-scanning, how realistic is that for species that are not yet known to pose a risk? You have to select what you are scanning the horizon for, do you not?

Dr Bullock: Do you mind if I just pick this one up, just with one example? I was involved in a study group looking at horizon-scanning recently. The red lionfish, which is established in the Caribbean, non-native there—it is possible that, with a bit more surface sea temperature rise through climate change and north-west Atlantic drift, it will start to colonise the Mediterranean. It is a highly predatory fish. It is also quite toxic, and it is predicted to have a big impact. It is not here yet. It is not on this side of the Atlantic, but it could get here. We need that kind of forward-thinking to look at the list of thugs that are out there that are not here yet.

Q145 Mark Lazarowicz: There are a number of issues I could pursue, but I will perhaps leave that aside at the moment. In terms of the way surveillance is organised within Britain itself for invasive plant species, is there any way anything could change there to improve it? In particular, could the horticultural industry have a greater systematic role in reporting possible new species?

Martin Emmett: Yes. Can I make one point that I think is really important? It is that the horticultural trade in the UK has shifted over the last 20 years to integrated pest management, which means we are using a lot more cultural and a lot more biological systems to control pests. The consequence of that is that our monitoring systems have to be a lot more vigilant. I have a much higher degree of confidence now that, when we have a problem within the trade, we do spot it very, very quickly. We cannot afford not to. You cannot operate IPM biological systems without dealing very quickly with the problem.

Q146 Mark Lazarowicz: In terms of other agencies and sectors as well as the industry itself, what role do they have, or how can their role be improved or developed? The role of the public was mentioned, and the regulatory agencies of various sorts, government, central and local. Could more be done there to be able to try to watch the sectors?

Dr David: In various bits of evidence that has already been given, a great deal of credit has been given to the Non-native Species Secretariat, and that is absolutely right. That has done an enormous amount of work on very small resources, and its website provides a sort of portal for people to report invasive species and detection of invasive species. That needs to be amplified through education and campaigns. A certain amount of evidence has been given in relation to the "Be Plantwise" campaign, and that is a good model to start with. That engaged horticulture and the aquatic trade, and all the other people who were affected by it. I think it is about raising awareness across the country so that people become more aware of these things and they report them in, effectively, through the shared portal like that.

Q147 Chair: Yes, Mr Emmett?

Martin Emmett: Can I just make a comment about citizen science, though? I think you were advised in your previous meeting that private citizens may receive compensation when they notify against a pest or disease. That is generally not the case. If you have a tree in your garden that is badly infected with an invasive species, you may well have to cut it down and that will typically be at your own expense. With the Asian longhorn beetle, the Forestry Commission found some extra funding to pay private citizens, but that was an exceptional case. I think there is a limiting factor in terms of engaging the public when it

comes to their own gardens, for example. They may find themselves liable for charges they may not want to face.

Q148 Mark Lazarowicz: Finally, we heard some concerns earlier or previously about the slowness of regulatory risk assessments. Do you think that is a problem? If so, is there any way in which the process could be streamlined so that the assessment can be made at an earlier stage?

Martin Emmett: My worry is that one of the ways that people streamline things is to summarise things. We have talked in your previous sessions about cotoneaster and the faults that were made there in terms of treating a whole genus as potentially as a pariah. I think, unfortunately, we do have to be a little bit systematic and methodical, but I do hope that we take the opportunity to involve the trade in that process as much as possible.

Chair: I hope we have heard that.

Q149 Mrs Spelman: A tiny question on horticultural trades. There have been instances in the past where an invasive species has decimated a commercial crop, where the industry itself has created its own industry scheme, where all the growers of that crop pay into a scheme so that the affected growers are compensated, to encourage people to own up to where they find it. This was Rhizomania in sugar beet. In horticulture, is there anything parallel?

Martin Emmett: No. Simple answer.

Q150 Dr Offord: I want to go back to what I asked the previous panel, and that is about the cost-effectiveness of controlling the invasive species. Particularly, what would you believe to be the consequences of introducing bio-controls for invasive plants such as Rhododendrons?

Dr Bullock: We are aware of the releases of the psyllid to try to control Japanese knotweed, and I am sure we do not know the full outcomes of that at the moment. I would need to turn it on its head and just say, what do we mean by success here, and what does it mean when you have controlled this plant? What was the objective in the first place? What did you want to see as a result of that action? As far as I can see, there is far too little reporting of what would be real success, which is the restoration of something that is native, habitats of species, and virtually no reporting of failures. I think there is an issue there that we need to focus on and emphasise.

In terms of biological control, in the National Trust we have experience of applying the weevil that would devour water fern, Azolla. Characteristically the water fern sometimes completely disappears from water bodies, for some unknown reason. We brought the weevil in, but the week before the Azolla had disappeared as if it had been frightened off. We have no effective knowledge of how these work. As far as I can see, they rarely apply it at the moment. I know of no good examples for the usual round of suspects that are out there, except for the trial releases. It seems to be very early days.

Q151 Dr Offord: I also want to ask you questions about what you have learned from other countries in their eradication and detection of invasive species.

Dr Bullock: If I speak about vertebrates and perhaps my colleagues can talk about plants. We eradicated rats from Lundy Island fairly recently, about 10 years ago, to save the Manx shearwater from becoming extinct through predation by rats. Our knowledge of how to do that and the people that we hired in to do that came very firmly from New Zealand,

where—as we heard in the previous session—there are much stronger and rigorous measures to try to combat non-native invasive species, whether they are vertebrates, pests on islands or plant diseases. We have a lot to learn from New Zealand, and we did learn and we are still applying that rigour and those methods.

Q152 Dr Offord: Again, Lundy being an island, it is possible to eradicate a pest such as rats. But on the mainland of the UK—and particularly thinking of your organisation—how do you feel about Defra’s approach of getting conservation groups to undertake this kind of work? It works on Lundy, but on the mainland of the UK?

Dr Bullock: Our focus would be water catchments, typically, where we have some of the priority species for action, such as Japanese knotweed, often Rhododendron, Himalayan balsam and so on. We recognise that unless we have true partnerships with our neighbouring landowners and tackle the whole catchment, it is pointless our doing our little bit. We know very well that non-native invasive plants can typically spread through vegetative propagules, for example; they often survive in water and are often associated with water catchments. We have to work in partnership. That is where citizens, local authorities and experts need to work together and be pushed in that direction.

Q153 Dr Offord: That is great. Thank you. My final question was about looking at the ecology. Again, it is the third question I asked the previous panel. Do we know enough about the ecology of invasive species?

Dr Bullock: In terms of some of the plants, I think we do and we do not. In terms of the invertebrates, we sometimes do. But a very good anecdote here is that in 1977 the muntjac deer was considered to be benign, and it is now on schedule 9 of the Wildlife and Countryside Act. Part of the reason is that many of these species go through a lag phase, which we have heard talk about earlier; they are sleepers, and we do not really understand what they can do when their populations start to rocket and then have a big impact. That is going to require expert judgment. We do not necessarily have the science to back us up. We need to use gut feeling as well.

Dr Offord: Thank you.

Q154 Peter Aldous: I will be very brief. We heard the last panel’s views on schedule 9 listing, and I would welcome your views on that. Generally, also with regard to the possibility of a whitelist, and perhaps could a greenlist solution be a way forward, where you would have species assessed and identified as low-risk?

Martin Emmett: Speaking for the horticultural trades as a whole—and also in fact for Plant Heritage, which is our leading charity of concern—as we are maintained by diversity in cultivated plants, we cannot support a whitelist. It would definitely have an impact on innovation. Innovation is certainly absolutely key to the gardening industry. Imagine a Chelsea that was the same every year; it would not have very much appeal—you might think it is the same anyway, but we do try to innovate. It is absolutely key. A whitelist would have a major impact for innovation. In fact, the sorts of people that we are talking about, who experiment with plants, tend to be smaller nurseries and private individuals as well. We are talking about getting the message right down to that level. A whitelist is something we would absolutely not support.

Q155 Peter Aldous: Dr David?

Dr David: I echo the thoughts or comments that were made by an earlier panellist on schedule 9. The 2010 revision to schedule 9 was not at all transparent as to how the list

was put together. There was certainly inadequate consultation in relation to that and some very odd things got on—particularly water hyacinth, on which the Non-native Species Secretariat has carried out a risk assessment; it has said it is of very low risk to the UK of being invasive. *Cotoneaster* is another. *Crocodymia*, the *montbretia* is the common name for it.

There were all sorts of complexities about the listing in terms of the definition of a species. A species may include any sub-species, variety or hybrid. With the case of *Rhododendron*, you have a problem. There are 350 cultivars of *Rhododendron* that have *ponticum* in their parentage. According to the law, technically those are also banned from being planted in the wild. Of course I would never endorse doing that anyway, but there are potentials, if the regulation in relation to that was extended to be more severe in terms of banning planting in any circumstance or trade. I think there are some real complexities with that listing process.

That said, I also endorse what was said earlier, which is that when it is put together properly, the blacklist is the right way around. I certainly share Martin Emmett's view that whitelisting would be totally inappropriate, as far as we are concerned. I think there is some interesting stuff to be said about the greenlisting approach. I would like to see more detail on how that works in practice, but it is a way around of saying we could let new trades through if we had them on a sort of greenlist approach. Fundamentally, we would want to see the blacklist as—

Q156 Peter Aldous: Dr Bullock?

Dr Bullock: I have nothing to add.

Q157 Mrs Spelman: Very quickly. In the previous answer, Mr Emmett has already stated a preference for a regional approach in the proposed new directive. I wonder if the other two of you had anything to say on that. This point about, would labelling by country of origin help combat the risks associated with invasive non-native species?

Dr Bullock: I think there is a good argument for risk-based trading, and so identification, as you have described. I think we would be remiss if we were not sensitive to latitude, in terms of European countries and the species that they hold and can support because of the particular climates that are there right now. Water hyacinth is in Spain and Portugal, just like the Cattle Egret and the Little Egret. It will get here soon, with the present climate change scenarios, so we need to be wary of that. Yes, I agree with both of those points.

Q158 Dr Whitehead: There has been some discussion of the question of changes in the law, particularly in relation to access to land and property to carry out control measures. There are some suggestions that the Law Commission is looking at such changes. What do you think might be the utility, in effect, of changes in the regulations, on access to land and also legal liability of the introduction of non-native species?

Dr Bullock: Taking people with you and properly consulting are the only way you are going to tackle non-native invasive species by way of eradication, certainly. I know full well that some eradication programmes can be very controversial. You need to start from that basis, because that is when you can start to talk to neighbours. Rather than throw some weighty legislative instrument at your neighbours and say, "I am going to come on to your land because I have the right to get rid of the Japanese knotweed because it is in the catchment", I think the consultation process, the softly-softly approach, is very much more important, although I would not stand in the way if the issue was critical.

We are famous for seabirds in a European context. If rats got on to some of those islands where there are seabirds, where there are no rats at the moment, it would be vital to act very quickly. In that kind of situation, it would be helpful to have a statutory instrument that allowed us to kill those rats before it became a problem and we lost that precious resource. It is a question of degrees and importance and urgency and significance of the asset.

Q159 Dr Whitehead: Being able to get in there and do it in advance of any permission or discussion with the landowner at that point?

Dr Bullock: If it is top priority—and I think that would be a top priority—I would say yes.

Martin Emmett: Can I just comment? In terms of the current plant health regime, of course our plant health inspectors enjoy that power at the moment. I believe they have applied it very effectively and sensitively. I think the current regime is what we should keep.

Q160 Dr Whitehead: I think this is particularly concerning Mr Emmett. There has been the question of the levy that might be imposed on businesses selling non-native species. Would that be something that you would favour or find any utility in pursuing?

Martin Emmett: No.

Q161 Chair: Would you like to elaborate?

Martin Emmett: Yes. If you look at the garden plant trade, the majority of it is non-native species. Could I just add something about the complexity of this argument? Listening to ecologists, on the one hand you might like us not to grow non-native species. Then, when we do grow native species, we get ecologists complaining about the cultivated forms genetically polluting the natural populations. We are in a little bit of a difficult position here, between a rock and a hard place. Fundamentally, gardening has always been about growing plants where they are not supposed to be—that is essentially what gardening is. Essentially, you are always challenging an ecological boundary, and for centuries we have managed to do it sufficiently sensitively in the majority of cases, accepting that there have been exceptions.

Q162 Dr Whitehead: When we talk about non-native species sales, we are not just talking about plants. For example, one of the issues about terrapins in ponds is essentially related to their sale as exotic pets. Would such a levy or even licensing apply to such sales, being of utility where it related to vertebrates, or non-plant species?

Dr Bullock: I am trying to think about how it would work in practice, and I am not quite sure if it would. There are so many of those vertebrates out there. It is not just red-eared terrapins these days; it is box turtles and so on and lots of reptiles and amphibians. I think it would be tricky to put into practice, even if it was desirable.

Q163 Chair: Before I finally close the session, I have two very quick questions. What is the tendency in England and Scotland, compared to the approach in Ireland? Do you have any comments on that at all?

Dr Bullock: I certainly have a view on that. I quite like what Scotland has done in terms of the WANE Act and the legislation down to species control orders, for example. I think that is a good code of practice that has been generated. I also think that it does not make biogeographical sense for Northern Ireland and the Republic of Ireland to do anything other than agree on action together as an island. That is going across a nation-state

boundary, but it is a totally porous boundary for both people and also for non-native invasive species. For example, tackling the grey squirrel, tackling the muntjac deer, which has recently got loose in Ireland. Phytophthora and so on. It needs to be an all-Ireland island approach.

Q164 Chair: My final question relates to the evidence that we had from the RSPB. You will be aware that we just published a report on overseas territories. I wonder if you have any recommendation that you would like to bring to our attention in respect of invasive species and the financial support that might be needed in overseas territories, or the implications of that issue there in relation to the UK.

Dr Bullock: I have two points. Yes, absolutely, we should invest heavily in the amazing biodiversity that is threatened by non-native invasive species in our overseas territories. Secondly, I draw attention to biocides regulations that are going through at the moment, and the need to keep hold of the promise of a derogation to continue to use second-generation anticoagulants to kill rodents on those islands where there are seabirds. At the moment, that may not be possible, in which case we could lose a lot of tremendous wildlife resource on islands in the overseas territories and also in the UK.

Q165 Mark Lazarowicz: Which regulations are these? Do they apply to—

Dr Bullock: Biocides product regulations.

Q166 Mark Lazarowicz: The UK regulations?

Dr Bullock: No, it is EU, and it is designed to restrict the use of second-generation rodenticide anticoagulants. Not warfarin, but difenacoum and so on. That is a great concern if that restriction applies to seabird islands, where there are rats, for example, and it could be the overseas territories or it could be UK islands. If we do not have access to these effective poisons, we could lose a real national treasure there.

Chair: That is very helpful indeed. Can I thank each of you once again for coming along this afternoon? I hope you will take an interest in our inquiry when we finally make our recommendations and report. Thank you very much.