

Environmental Audit Committee

Oral evidence: Invasive species, HC 2129

Tuesday 11 June 2019, Cambridge

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Members present: Mary Creagh (Chair); James Gray, Anna McMorris, John McNally, Alex Sobel.

Questions 85 - 182

Witnesses

I: Catherine Wensink, Executive Director, UK Overseas Territories Forum, Dr Mark Belchier, Director of Fisheries and Environment, Government of South Georgia and South Sandwich Islands, Dr Kevin Hughes, British Antarctic Survey, and Jonathan Hall, Head of the UK Overseas Territories, Royal Society for the Protection of Birds.

II: Dr David Aldridge, Senior Lecturer in Aquatic Ecology, Fellow, St Catharine's College, Cambridge, Rob Quest, Assistant Director (Animal Health and Welfare), City of London Corporation, Dr Tracey King, Assistant Chief Executive, Ornamental Aquatic Trade Association, and Wayne Grills, Chief Executive, British Association of Landscape Industries.

Written evidence from witnesses:

- [UK Overseas Territories Conservation Forum evidence](#) | [PDF \(138 KB\)](#) 
- [Government of South Georgia and the South Sandwich Islands](#) | [PDF \(313 KB\)](#) 
- [RSPB - written evidence](#) | [PDF version \(127 KB\)](#) 
- [Biosecurity Research Initiative at St Catharine's \(BioRISC\)](#) | [PDF \(313 KB\)](#) 
- [City of London Corporation - written evidence](#) | [PDF version \(125 KB\)](#) 
- [Ornamental Aquatic Trade Association](#) | [PDF version \(138 KB\)](#) 
- [British Association of Landscape Industries](#) | [PDF version \(114 KB\)](#) 

Examination of witnesses

Witnesses: Catherine Wensink, Dr Mark Belchier, Dr Kevin Hughes and Jonathan Hall.

Q85 Chair: I begin by welcoming our guests to this, our second external session. Our first one was at the Victoria and Albert Museum, and was about fashion. Will introduce yourselves, please?

Dr Belchier: Good morning, everybody. I am Dr Mark Belchier representing the Government of South Georgia in the South Sandwich Islands. I am based here at Cambridge at the British Antarctic Survey. It is probably quite a long way to get here for the rest of my colleagues, who are based down in Stanley in the Falkland Islands.

Dr Hughes: Good morning. My name is Kevin Hughes, and I am from the British Antarctic Survey where I am the Environmental Research and Monitoring Manager. I lead on biosecurity.

Catherine Wensink: Good morning. My name is Catherine Wensink. I am from the UK Overseas Territories Conservation Forum. We are a UK-based NGO. We have been in existence for about 30 years and we work with non-governments and governments in the overseas territories to protect their biodiversity.

Jonathan Hall: My name is Jonathan Hall and I am head of the UK Overseas Territories Unit at the RSPB.

Q86 Chair: Thank you very much. You are all very welcome. Can I start with a question to you, Ms Wensink? Can you kick off by telling us what you think are the biggest challenges from invasive species in the UK's Overseas Territories, please?

Catherine Wensink: Some of the biggest challenges are the increased rates of introductions of invasive species. We have seen some incredible work from the GB Non-native Species Secretariat looking at horizon scanning and that has thrown up all sorts of potential introductions in the overseas territories.

Most of the territories are small islands with small populations and small economies, which often lack the technical expertise to make decisions on forward planning in terms of invasive species. There are also resource issues with funding. The overseas territories are not able to access many funding streams because of their unique relationship with the UK, so they have very few funds to access. Big projects involving invasive species cost a lot of money.

Also, there is potentially a lack of legal assistance in developing legislation and regulations. A lot of these are needed in the overseas



HOUSE OF COMMONS

territories, and that is quite a big issue for some of the overseas territories as well.

Q87 **Chair:** When you say the rate is increasing, what has it gone from and to? Is it increasing exponentially or logarithmically? Has it gone from one to two or from one to 10? Can you talk us through the numbers?

Catherine Wensink: Sure, although I would not be able to put an exact figure on it.

Many of the overseas territories still lack sufficient infrastructure once those projects take place. For example, in Montserrat about 15 years ago they had a new airport and, during building the new airport, an invasive species from Antigua was brought in, the fire ant, which is a very bad invasive species. In terms of those rates of invasion, infrastructure projects are one of many things that can bring in new invasive species. For example, Ascension Island is having some work on the runway at the moment and that is linking with the US counterparts. The potential to bring in invasive species on that is huge but nobody can put a figure on that. Some of the horizon scanning workshops have identified what potential species could come in, but they have not got to looking at this rate of invasion yet.

Q88 **Chair:** Okay. Give us 10 seconds on why the fire ant is bad.

Catherine Wensink: Okay, I can tell you first hand. I have been stung by fire ants. It is very painful. We were doing a site visit in the school on Montserrat, where there was a colony. They are a big problem in the US. They can get into electrical generators—apparently they really enjoy building their colonies or nests in there—so there is a huge economic consideration. Also, I know from visiting with colleagues from Ascension that there is a real worry about them invading turtle nesting sites. That has the potential to really impact some of our territories, which are important for many species, not just the turtles.

Q89 **Chair:** You talked about the legislation aspects. What laws do they need?

Catherine Wensink: I do not know if anyone else can answer that question directly. Maybe Jonathan. I do not know.

Chair: Who would like to answer? Jonathan?

Jonathan Hall: There is a very diverse range of legal situations across the territories, but, to our assessment, certainly the majority either lack any biosecurity legislation at all or have very old legislation, mostly done for agricultural or health purposes perhaps 50 or 60 years ago. For the people on the front line trying to prevent new arrivals, they are not backed up by legislation or any enforcement powers or preventive measures that they can legally take, and then they have a lack of people to implement what legislation and policies are in place. For example, on Ascension where a risk of fire ants and malaria-bearing mosquitoes was recently highlighted, there is no legislation in place yet, although there is



HOUSE OF COMMONS

work underway, and there is one part-time biosecurity officer trying to make sure that this biodiversity hotspot does not have new arrivals with significant negative impacts.

Q90 Chair: As far as you are aware, are environmental impact assessments done for these runways that the British Government is funding? Is that something we should ask Ministers?

Jonathan Hall: I believe that has been done for the Ascension project, although there are not any environmental impact assessment legislation requirements for Ascension itself. This is where there is a reliance on the US and UK Governments adopting a best practice that is not necessarily legally required in a Territory that has very few laws in place. That is where the tension can be found. They are retendering for the major Ascension airport resurfacing project at the moment. I believe there was an unsuccessful tender round, so in the retendering process, there is perhaps a pressure to look at what extra requirements on the contractors could be cut or made less onerous. That is where certainly the original commitment to having best practice biosecurity on such a project must be maintained.

Q91 Chair: Is that not the airport that has just been finished?

Jonathan Hall: That is on St Helena. That is interesting. It is worth mentioning that there are at least two or three new invasive plant species that that airport project, which is DfID-funded, is believed to have introduced. The Ascension airport resurfacing project is being led, I believe, by the US Government but with Ministry of Defence funding and partial oversight. It is a very complicated shared airport runway complex.

Q92 James Gray: Very briefly, the two things you mentioned regarding Ascension Island—the fire ants and the malaria-bearing mosquitoes—how did they get there?

Jonathan Hall: Neither is there yet. Both have been identified as key threats in this horizon scanning process led by the UK Government. Ants are often referred to as “tramp ants” because they have been so effective at spreading to many islands around the world. Equipment is one of the most common methods—bringing in diggers or JCBs. Tyres are famous transporters of mosquitoes with little areas of water in them.

Here is one thing to perhaps bring this to life. In 2016, an assessment of US cargo being brought into the US base on Ascension found that over 50% of the containers inspected contained live invertebrates; there were also live geckos and dead frogs by the time they were found. One of the key links for Ascension on risk is from the US resupplies coming from Florida, so much more of a similar environmental context than bringing in something from the Falklands over to the UK.

Q93 James Gray: Improved biosecurity now could stop it?



HOUSE OF COMMONS

Jonathan Hall: Yes, absolutely. That is where prevention is so much cheaper than cure. There is work underway supported by the GB Non-native Species Secretariat to try to help Ascension introduce biosecurity legislation. We are part-funding the biosecurity officer in the Ascension Island Government, but this is a very small island jurisdiction with 750 people and severe vulnerability.

Q94 **Chair:** Thank you. Dr Belchier, what capacity do the UK Overseas Territory Governments have for dealing with these invasive species when they get there? What needs to improve?

Dr Belchier: It probably varies greatly across the different territories. South Georgia is probably at the other end of the scale to some of the ones we have heard about in that our concerns vary slightly. We have had a number of very successful programmes of eradication, so now we are probably more concerned with ensuring that the islands of South Georgia remain free of those previously invasive species. We are also aware that under changing climate conditions, there may well be new pathways for the introduction particularly of marine species to South Georgia.

We are also very lucky in that we do not have a native population or any population at all, just visiting scientists and Government officers, and we generate revenue through the sale of fishing licences within the territory. A very large percentage of the revenue from fishing licences is put back into environmental protection. We have very strict laws on biosecurity both in the marine environment and through tourist activities in the terrestrial environment. We are very different from some of the other territories.

Q95 **Chair:** Thank you. Dr Hughes, is the UK Government doing enough to support the overseas territories?

Dr Hughes: I cannot speak for the territories other than the British Antarctic Territory. Due to the very strict legislation that prohibits the introduction of any non-native species into the British Antarctic Territory and Antarctica as a whole, we have to be extremely careful and extremely vigilant in all our practices.

The UK is undergoing a period of modernisation of its infrastructure in Antarctica, particularly with the arrival of the RRS Sir David Attenborough, and that has caused us to have infrastructure projects such as the development of new wharves and new buildings. That is very good because we get to put in good biosecurity facilities in our stations, but we are spending a reasonably large proportion of those budgets on biosecurity practices. If I look at some of the numbers, we are putting a new wharf in at Rothera Research Station in BAT and we have spent over £400,000 on biosecurity practices. That is through our contractors BAM Nuttall.



HOUSE OF COMMONS

An example would be when we imported 4,500 tonnes of cargo into Antarctica to do that project, and once we had done all the biosecurity practices we found that we had 44 minor biosecurity breaches. Those were picked up just before that equipment was offloaded. That was one biosecurity breach per 100 tonnes of cargo, which is extremely good.

Q96 **Chair:** What is the total cost of that wharf-building project? It is £400,000 out of what?

Dr Hughes: It was £39 million. Across all our different projects, between 1% and 1.5% of our budget is on biosecurity.

Chair: Thank you all very much indeed. We have a question now from John.

Q97 **John McNally:** Thank you, Chair. My questions are on funding for the overseas territories and are principally to Mr Hall and Ms Wensink. Given that prevention is more cost-effective than eradication and control and, as you have probably mentioned, an ounce of prevention is better than a pound of cure, how effectively are Government funds being spent on projects in the overseas territories?

Catherine Wensink: Perhaps from the work of the Committee previously, the spend on Darwin Plus, which is the only Government funding stream solely for the overseas territories, has seen an increase from about £3 million in round 6, which was in 2017, to about £4 million in 2018. However, the costs of getting rid of an invasive species once it has become established are huge, and Darwin Plus has so many priorities that it is hoping to deliver and such broad themes in terms of the environment. Invasive species is just one of them; the others are delivering on the blue belt, conservation and management of coral reefs and seagrasses, waste management, particularly plastics, mitigating impacts of natural disasters—again, a huge undertaking—implementing national biodiversity action plans, and conservation and restoration of wise use of wetlands. Again, those can be quite large projects. I would say that it is trying to do a lot of stuff with perhaps not a huge amount of money and we would always call for that to be increased.

Jonathan Hall: Darwin Plus is the only project funding for territory organisations, and then there has been this four-year project that the GB Non-native Species Secretariat has been running. It is only costing £1.25 million but it has been brilliant at bringing together UK Government expertise and making it available to the territories for prevention—it is not working on the cure side at all. That has identified these high-risk species, as mentioned. It has identified the key pathways and I think, most brilliantly, it has also drafted model biosecurity legislation for these small jurisdictions and has money in it for legal capacity to work with their often very overstretched attorney general's offices to help implement these laws. There have been previous examples of draft Bills made and there has simply not been the capacity to pass them.



I would say that this is a really good spend of money. The kick in the teeth is that it all expires of course in March, at the end of this financial year, and there is quite simply no way that all the follow-up from having identified these high-risk species, these key pathways and starting to work with the attorney general offices will be complete. To my mind an extension of that funding to make sure that this programme completes its step-change in biosecurity across the territories is really essential.

Q98 John McNally: To follow up, you have just mentioned that there is a huge broad spectrum of things that you need to target. It seems very wide, and I am beginning to wonder how you are going to cope with this. Should there be a specific funding source for dealing with invasive species prevention? Could you make it really specific so that control in the overseas territories would have that particular type of funding, since it is the biggest threat to biodiversity in these areas? Do you understand what I am saying?

Catherine Wensink: Yes, of course. I think it is worth saying that it is very easy to measure the impact of a project that has eradicated something, and perhaps there is maybe something in that in terms of the political buy-in to have projects whereby you are preventing invasive species from becoming established. That would be the first thing that springs to my mind.

Something I forgot to mention was about EU funding as well, so from 2014 to 2019 the EU BEST fund supported €10 million worth of projects in the EU Overseas Territories, which has a question mark over it now. We heard in the other evidence sessions that you had from the experts that prevention is far better than eradicating something once it has become established, but I guess it is how you get the backing to be able to do this prevention work, which is perhaps not as “sexy” in terms of funding projects, and these massive conservation wins that we are seeing in terms of South Georgia and potentially others as well.

Q99 John McNally: That brings me on nicely to my last point. This is topical at the moment. The “B” word was mentioned earlier, and there is a lot of uncertainty about what is going to happen, so how reliant are the UK overseas territories on EU funding for these invasive species projects? How important is this funding? We are not going to get a second chance with this, I do not think, unless we make everybody aware of it. From the evidence we have heard and even this morning talking to some of the people here, people do not seem to be aware of the real problem. How do we get that message out there?

Jonathan Hall: Over the past decade the RSPB has been able to utilise €2.5 million of European Union funding on invasive species projects, both biosecurity and response in the overseas territories, and so I would say there is very significant reliance on EU funding as one of the very few other areas for support. The territories are ineligible for most UK domestic sources. They are ineligible for most international funding sources.



Q100 **John McNally:** Why are they ineligible?

Jonathan Hall: They fall between the stools, so from a UK perspective the National Heritage Lottery Fund funds a lot of major environmental projects, but they are not deemed part of the UK from that perspective, they are deemed international. The Global Environment Facility will fund major international projects, but while many of these territories will have the statistics to be a small island developing state, they do not qualify for this funding because they are deemed part of the UK and therefore in the "developed" category. They are stuck with very few funding sources and so the EU BEST has been a really vital source of funding.

One other point on funding, if I may, is that Darwin Plus, as this dedicated fund, has been fantastic for the territories, it but is basically capped at projects around £300,000 in size. There was a study earlier this year that identified the top 300 islands around the world for invasive mammal eradication, such as the rats and the great work on South Georgia. Certainly 20 of those islands of the top 300 worldwide are in the UK Overseas Territories and of the top 10 only one of those could be funded from Darwin Plus. Most of the rest would cost in the millions, so a project fund is also needed that could fund larger scale projects for these big restoration projects, to deal with invasive species that have arrived and fund the £1 million to £5 million projects, as EU-LIFE was doing. Ironically, EU-LIFE is just being opened up to the overseas territories in the next funding round to come in current EU budgetary discussions. To link back to the EU, there is that need for an equivalent of the LIFE-scale funding as well as the smaller BEST project funding.

Q101 **James Gray:** Dr Hall has just touched on this. Would the whole panel not agree that there are two quite separate things here? One is biodiversity protection, which is an ongoing revenue-funded thing, which we have to find a way of paying for out of annual accounts, and invasive species eradication, of which the biggest example is of course South Georgia—£10 million, entirely or very largely privately funded by the South Georgia Heritage Trust and paid for by a Swedish billionaire. There is a difference here. These huge projects that cost an enormous amount of money are very important, but we are unlikely to find real funds for them, whereas ongoing everyday biosecurity in the overseas territories is something that we ought to be able to find funds for from ordinary revenue accounts. Is that a reasonable summary?

Catherine Wensink: I think that would be a fantastic idea. We need a range of projects as well, from these small project funds where the NGOs are able to bring in volunteers and to really add pound-for-pound on that investment, but also the large funds as well. We spoke before about the Dutch postcode lottery. They give large amounts of money for dream projects. A lot of these eradication projects are probably dream projects that on-the-ground workers would really want to do if they had the money to do them, so in terms of the ongoing support that you are talking about, yes, I think absolutely, but I think we also need room to have these dream projects become a reality.



Q102 **Chair:** A short follow-up from me. Can you explain how I tell my Wakefield constituents why they are working three jobs to fund eradication projects or biosecurity in British Virgin Islands that does not collect taxes from its own citizens and is a haven for tax avoidance? What is the argument there?

Catherine Wensink: A great question.

Chair: Maybe I should save that one for the Minister. It is a naughty one, but why are they working three jobs to fund a Bermuda tax haven, a BVI tax haven and Lord Ashcroft's private jets? There are a lot of wealthy individuals.

Catherine Wensink: It all comes down to language, I think, yes.

Chair: I am exaggerating for emphasis.

Catherine Wensink: I think it is a shame when we talk about the overseas territories in terms of financial services we label them as tax havens, but then when we are talking about this global biodiversity in which we have an international obligation to meet the targets—the Aichi targets, the Sustainable Development Goals. The UK signs the Convention on Biological Diversity on behalf of the overseas territories, so it is a moral responsibility for the UK to support hand-in-hand the overseas territories because they really cannot do it on their own. It needs to be a partnership. We have left our mark on the world in terms of invasive species, introduced species—for example, the flax that was planted on St Helena for the Royal Mail postage sacks, the ties on the sacks, is still there now. That is a legacy that the Royal Mail has left behind and we have a moral responsibility to help.

Chair: We will see if we get as good an answer as that from the Ministers, but thank you. That was great.

Q103 **Alex Sobel:** Following up from Mary's opening questions, Mr Hall, evidence you said that 94% of the UK's biodiversity was in the UK overseas territories, making it hugely internationally significant—our contribution to biodiversity in the overseas territories. Where are the biggest weaknesses in biosecurity in overseas territories and where should we concentrate our fire in terms of legislation and the need to legislate to ensure that we keep that level of biodiversity in the overseas territories? Maybe Mr Hall could start then Dr Belchier could add anything he would like to add.

Jonathan Hall: It is the more remote and oceanic islands in particular of the South Atlantic, the Pacific and Indian Ocean, that have been the biggest crucibles of evolution and have the highest levels of unique species on them combined with having the lowest GDP per capita and the smallest population sizes. For me the support for these territories is particularly essential. These are the ones that in particular do not have those biosecurity frameworks in place, or, if anything is in place, very frequently do not have anyone to enforce it. They are very proud of their amazing wildlife and very keen to see it protected, but they struggle with



the frustration of not necessarily being able to protect their island environments as much as they would like, and the reliance for instance on the ports in South Africa to ensure that species are not getting on to boats coming to them with their vital supplies. There is a lot of support that could be done there in a very cost-effective manner. These territories also have some of the most iconic species that are loved by your constituents in terms of vast numbers of penguins, turtles or other iconic species that really chime with the UK public.

Dr Belchier: One of the issues that we have, certainly in the South Atlantic OTs, is a very small number of staff. The South Georgia Government probably has a maximum of eight people who do not necessarily have the specialist skills to be experts across all facets of biosecurity. We are very lucky in having very close partnerships with the British Antarctic Survey to draw on that expertise, but that access probably is not available to other OTs to draw on similar expertise based elsewhere.

I also think something that Jonathan touched on as well is that when biosecurity issues arise within your territory it is probably a little too late. You want to be able to move the border further back in the process. Using South Georgia as an example we have a large number of tourist vessels visiting, scientists visiting and fishing vessels, ensuring that biosecurity is undertaken at ports of exit before they even enter our maritime zone is far more effective than having to do that work at South Georgia itself, where resources and the infrastructure just do not exist.

Catherine Wensink: I will just add that, obviously, with “Planet Earth” and “The Blue Planet” everybody is absolutely fascinated about the natural world and I think now is the time for this easy sell of conservation wins. There is so much innovation that can be done in the overseas territories to help the UK as well in dealing with invasive species. We are talking about small islands where the scaling up could be potentially very powerful for the UK as well.

I would mention the conservation dogs that have been working on South Georgia that is a fantastic story that the UK should know about because everybody loves dogs. They can help with dealing with invasive species and rodents, and there are all sorts of other species where that can have a wider application.

In the other evidence session you mentioned environmental DNA, the processing of looking at marine invasive species. That is something that potentially could be very interesting to trial in some of the overseas territories and have an application back home in the UK.

Q104 **Alex Sobel:** We are in a world where we are constantly talking about customs and border checks and future policy. Is this an area for, depending on if we keep our current status, the EU to look at? Obviously many EU countries have overseas territories like the UK. Or in a post-Brexit Britain, should we build into our trading negotiations with these



countries protecting the biodiversity in overseas territories and points of origin for goods and people in those countries when we come to sign new trade agreements?

Catherine Wensink: Speaking for the Caribbean, there is an awful lot of goodwill between the French territories and the Dutch territories that is there already and this co-operation regionally to pool resources and expertise is happening, and more could be encouraged by the UK. I do not know what the outlook is for that co-operation post-EU, but I would say the French and Dutch territories particularly in the Caribbean would obviously want to co-operate as much as possible.

Q105 **Alex Sobel:** Maybe that is one for the Ministers as well. Answering Mary's question you touched upon some projects that had been completed or were well in process—the airport in St Helena and the wharf project in the Antarctic. Then we have new projects coming onstream, the airport in the Ascension Islands and the wharf in South Georgia to accommodate the British Antarctic Survey vessel, the Sir David Attenborough, that I am sure we are all very proud of. What should the UK Government do to minimise biosecurity risks in those projects and what lessons have we learnt from those projects that have already been completed in terms of what the UK Government can do and how they can support the UK overseas territories in ensuring we do not have those invasive species and we minimise the risk to biosecurity?

Dr Hughes: From previous experience we in the British Antarctic Survey and the projects we have been involved in have already invested a lot of effort in minimising the impacts of non-native species and importation through very strict biosecurity practices. It makes sense that should continue in projects outside BAT as well and other OTs, and also that we recognise, for example, in the KEP wharf we put in biosecurity practices along the whole of the supply chain from the UK through the Falkland Islands all the way through to South Georgia. That is what we are trying to do and we are investing, as I said earlier, a reasonably large proportion of our budget in ensuring that happens. But that has to be recognised as a cost for any infrastructure project.

Q106 **Alex Sobel:** Dr Belchier, do you want to come in on this one?

Dr Belchier: I defer to Kevin's expertise as he has been heavily involved in the development of the environmental impact assessment for the whole South Georgia KEP wharf project. I would say that as part of our legislation, the Wildlife and Protected Areas legislation at South Georgia, it is necessary for anyone doing any type of project, whether it is a tiny scientific project or a relatively large infrastructure project, to consider the restricted activity permitting system we have in place. Hopefully that puts in place an ability to capture any activity. Obviously the wharf development is rather at the large end of the scale to what we are usually dealing with but even a small field party going to do work outside Georgia would have to fill in this restricted activity permit that covers explicitly potential biosecurity issues as well.



HOUSE OF COMMONS

Q107 **Alex Sobel:** Catherine Wensink touched on this in terms of communication between neighbouring territories. In particular, if a new threat is discovered in one territory how is communication undertaken currently and how could that be improved? Should this be something led by the territories themselves, considering the resource constraints—I take on board what Dr Belchier said before about the number of staff they have—or should this be led by the UK Government and the other European overseas territories Governments?

Jonathan Hall: Different territories have closer links to some than others and I think there are certainly good communications between some of those territories about new emerging risks, especially when they share transport pathways. We come back to the capacity issue, however, so it may be the same person who is responsible for the whole gamut of an environment department who is also sometimes meant to do the biosecurity checks. While mechanisms to improve communications would also always be welcome, for me it comes back more to the actual capacity in the first place to find a sustainable model of biosecurity that is deliverable by a small community but also mitigates enough of the worst risks.

Catherine Wensink: I would add that these emerging threats are coming up all the time. There has been one recently in the Turks and Caicos Islands of stony coral tissue loss disease. We do not know much about it, but we know it is absolutely devastating to coral reefs. There, it has only come about because they are seeing it happen and looking to see where it has come from. They think it originated in Florida.

I think there can be more sharing of these emerging threats and I know the GB Non-native Species Secretariat has done a really good job of building a network and supplying information. That is something that is really important.

Q108 **Alex Sobel:** Clearly human resources to deal with this are very limited in the overseas territories. What role could technology play to improve the biosecurity?

Dr Hughes: I think the bottom line is you just need people on the ground doing checks, using their eyes looking for non-native species. It takes people and it takes time. It is hard to see how additional technologies can help with that.

Q109 **Chair:** I thought wi-fi worked really well down in the Antarctic.

Dr Hughes: Okay, that is one thing, but in terms of biosecurity checks—perhaps ballast water is an exception.

Chair: Nothing beats eyes and ears, yes. We are going to move on with some questions on the polar regions from Anna.

Q110 **Anna McMorris:** Turning specifically to polar regions and looking at the unique risk invasive non-native species poses for that area what impact



HOUSE OF COMMONS

will increased ship traffic have on specifically the biosecurity of the polar regions and that area? It was reported that it has increased something like tenfold since the 1960s. With that, could you comment on how that impacts that area?

Dr Hughes: You are right, yes. Antarctica is hugely isolated. It has only had people visiting it for the last 200 years so it is one of the very few areas of the world that has not been impacted by non-native invasive species yet. Under the Antarctic Treaty we are obliged to try to keep it like that and prevent non-natives getting in. One of the issues particularly with ships is we have the opportunity for the introduction of species on hulls through hull fouling and also in ballast water.

We have some reasonably good legislation in place. For example, the UK put forward legislation on ballast water guidelines in 2006 that were endorsed by the Antarctic Treaty parties, and they entered into force. We also have IMO guidelines on ballast water that came into force in 2017, so that is great.

We think the bigger threat is probably to do with hull fouling. In some respects Antarctica has a natural barrier in that the sea ice that forms around the continent scrapes off some of the organisms that are stuck to the hull. The problem with climate change is that sea ice is declining, particularly on the western side of the Antarctic Peninsula within BAT, which is where most of the tourist ships and most of the national operators with their research stations are located, so that does present a particular problem. Things are much more likely to get in in the future. Whether they can establish once they arrive is a different question because the water is very cold, but we are expecting a 1°C increase in temperature in the next 100 years that would make establishment easier.

Q111 **Anna McMorris:** Of course, those species that do survive are likely to be those invasive species that could take hold. Would that be right? Is there a link to which species do survive?

Dr Hughes: Yes. Often it is what we call the weedy species—the ones that are very adaptable—that are the invasive ones that are able to colonise and spread. The other issue is a lot of the vessels that are entering Antarctica are coming from the Arctic potentially. There are cruise ships that operate at both poles—there are national operators at both ends. If those species can be transferred down to the Antarctic and to BAT, there is real potential for colonisation and impacts on the native species.

Q112 **Anna McMorris:** What can be done to limit that?

Dr Hughes: We are at the early stages of research into marine species and there is an awful lot to do. In terms of limiting it, we already have the legislation I mentioned earlier. It is probably too early to come up with more practical solutions because we just do not have a good feel about the numbers of species that are coming in or the types of species



HOUSE OF COMMONS

that are coming in. We need a bit more research to help answer that question.

- Q113 **Anna McMorris:** In terms of how the UK is managing the biosecurity risks in Antarctica and the wider sub-Antarctic region, drawing on the previous questions, how do you feel specifically in that area the UK is managing its approach?

Dr Hughes: I think both within South Georgia and BAT and through the work of BAS and the South Georgia Government, we have a slightly different legislative regime in that we do not want any non-native species being brought in at all and it is very, very strict. As a result of that we need to comply with UK legislation, which is the Antarctic Act, and South Georgia legislation, so we put in place really strict biosecurity practices.

The last thing we want to do is introduce a rodent to South Georgia or a non-native plant to the British Antarctic Territory, so we undergo intense levels of training for everyone who goes to Antarctica. We have biosecurity checks for people who are going in. You have to watch a biosecurity video if you get on the airplane to go to Rothera, our Antarctic station. If you go on our ships you get biosecurity training. It is really thorough and we put a lot of effort and time into that.

- Q114 **Anna McMorris:** Dr Belchier, would you like to comment on those questions?

Dr Belchier: South Georgia is almost getting back to a situation that the Antarctic has never been challenged, so we are getting back to a native environment with the ecological restoration that has gone on. I think the challenges are very similar in South Georgia to those faced in the Antarctic. Not only do we share a building but we share a lot of information.

The Antarctic Treaty system and the Committee for Environmental Protection within the Antarctic Treaty are really at the forefront of biosecurity and the UK is a major player within that. I would like to think that a lot of that legislation and ideas that result from the CEP would get transferred to South Georgia quite easily. I am not sure that is necessarily the case among some of the other OTs that cannot take on board those things as easily as we could.

- Q115 **Anna McMorris:** With the Antarctic Treaty having 54 signatories, how effective is multinational collaboration in the Antarctic on invasive species?

Dr Hughes: As Mark mentioned the Antarctic Treaty system's Committee for Environmental Protection is the body that provides advice on environmental issues to the Antarctic Treaty parties. It has placed non-native species issues at the top priority for its work looking forward. It is in its climate change response work programme. It is also in its five-year work plan.



Also internationally we have the Council of Managers of National Antarctic Programmes, which pulls together all the different parties who have research stations in Antarctica. They have developed checklists and guidelines for how you basically do biosecurity in Antarctica. Also the Scientific Committee for Antarctic Research that represents all the scientists who are working in Antarctica have produced codes of conduct to show how to reduce potential risk of introductions of non-native species into sub-glacial environments, geothermal environments and terrestrial environments.

There is a lot of information out there. What perhaps we do not have is a strong feel of how much that has been taken up and implemented by the parties. We are working with COMNAP at the moment to try to see if we can get another survey. There was a survey done about 12 years ago. We want another survey to see how much biosecurity practices have been put in place, how well is everybody doing and if there are opportunities for improvement.

Q116 Anna McMorris: Would you say that is a real level of concern at the moment in terms of collaboration and understanding of what everybody else is doing?

Dr Hughes: I think there is a lot of discussion about non-native species but the evidence to show us the level of biosecurity implementation is not there. That is a particular concern for BAT because we have roughly 18 other national operators working within that territory so to have a handle on what they are doing would be helpful because we are certainly doing an awful lot.

Q117 Anna McMorris: What could the UK Government be doing to help support that?

Dr Hughes: We do not have any direct jurisdiction over those other national parties due to the Antarctic Treaty, but we can certainly show leadership within the Committee for Environmental Protection. We convene the strategic group on climate change response and we have led on the revision of the CEP non-native species manual. There is almost a joke that the non-native species issue is the UK's agenda item at the meeting, so we are certainly doing our part there.

We can also do some really good quality research. The British Antarctic Survey has produced over 50 papers on non-native species and we feed that research into the policy environment. For example, we have a paper on intra-regional transfer of species going into the CEP this year and also another paper on marine invasions and we have developed internationally a non-native species response protocol with Argentina, Spain, France and New Zealand, which we are pushing through the system.

Q118 Anna McMorris: I suppose the difficulty is you are talking about the economy, travel and tourism with some of these countries and then the discussions on biosecurity. It is whether the UK Government is doing enough in raising that to bring those issues together in the right



multilateral platforms they can use and where they can.

Dr Hughes: Antarctica has its own legal framework. It is separate from the rest of the world in many respects and there are limited opportunities to engage with other parties within an Antarctic context. That has been done traditionally through the Antarctic Treaty consultative meeting so I guess that is the way we need to engage with those nations and push forward that biosecurity and non-native species work.

Chair: Thank you very much. The final set of questions now is from James.

Q119 **James Gray:** Before I forget, there is a new forum happening on 2 and 3 December this year: the Conference of Antarctic Parliamentarians, which for the first time is occurring in London in our own Parliament. I think that would be a very good opportunity to do precisely that kind of thing. Incidentally, she is too modest to say it, but Anna McMorris's father was a scientist with the British Antarctic Survey and spent three seasons—

Anna McMorris: Three years.

James Gray: —three years there, including overwintering on the ice and has a glacier named after him in Antarctica.

Anna McMorris: That was in the 1960s so a lot has moved on from there. He was there consecutively without going back, of course.

James Gray: Can I also declare an interest? This time last year I was lucky enough to be flown down to the Falklands largely by the Falklands Government, partly paid for by the All-Party Parliamentary Group for the Polar Regions of which I am chairman. I was then lucky enough to do the trip on the MV Pharos round South Georgia paid for by the Commissioner, as he is called, and great it was too. Incidentally, the biodiversity controls I experienced then were just superb. The zips on your anoraks were checked for seeds. It was just amazing.

I want to focus if I may on South Georgia. It ran a hugely successful operation eradicating the reindeer, which numbered in the tens of thousands if I remember rightly.

Dr Belchier: Seven thousand.

Q120 **James Gray:** Seven thousand, and then of course the rats. Both were enormously successful. I have two questions. First, to what degree could that experience be replicated elsewhere? I suspect your answer may be only to a very limited degree. Secondly, it was privately funded and therefore is there an argument that says it should have been funded by some other means?

Dr Belchier: Going to your second question first, certainly the majority of the rat and mice eradication was privately funded but a lot of the infrastructure support for that project was funded through the Government and obviously the ongoing monitoring and biosecurity is paid



HOUSE OF COMMONS

for largely through the Government, whereas the reindeer eradication was wholly paid for by the South Georgia Government.

I think different islands with rodent infestations pose different problems. One of the problems you have with aerial baiting is always going to be the risk of collateral damage, poisoning to native species, and that risk has to be managed. Similarly with the reindeer programme, that was relatively straightforward in that reindeer are much larger and they were shot. They were not poisoned.

On an island like South Georgia we were very lucky at the time in that different populations of rats were separated by glaciers and therefore it could be a phased baiting programme. That luxury does not exist on many islands that are either not glaciated or where glaciers are retreating, so you would probably have to do it all within one season for it to be effective, and that clearly is going to depend on the size of the island you wish to de-rat.

It was amazingly successful; about this time last year the island was declared rat-free. and at the time it was the largest island globally to be announced rat-free. Already we are seeing the consequences of that, such as the return of the South Georgia pipit in particular around Grytviken. where it had not been for probably 100 years. Equally some of the duck species and no doubt a lot of the smaller seabirds as well are recovering in great numbers. It was hugely successful. I think there are lessons that can be learnt from other OTs but not necessarily directly applicable.

Q121 James Gray: Just one detailed matter. Fur seals are now a huge over-population, are they not, in and around the islands? Is that a counterbalance to pest eradication or could fur seals now be described as something of a pest?

Dr Belchier: Fur seal numbers are probably at historical highs having been almost wiped out to about 200 individuals about 200 years ago. Then there has been a succession of removal of top predators. There was 100 years of whaling. The response from the fur seals is likely to have been to a lack of competition for Antarctic krill, so their numbers have slowly recovered over the last 30 years, and there are now probably around 5 million individuals.

Whales, as I am hearing all the time from my BAS colleagues and from other research in the region, are making a comeback. Humpback whales in particular this year and some of the other fin whale species are returning in significant numbers, so there could be a rebalancing of the whole ecosystem. I think that is something we need to be aware of when these eradication programmes are undertaken.

There is probably going to be a very large increase in the number of some of the seabirds of South Georgia and that is likely to have consequences further down the line, rebalancing the ecosystem hopefully



HOUSE OF COMMONS

to return somewhere to where it was pre-man's engagement on the island 200 years ago.

Q122 **James Gray:** Briefly just talk us through how we can stop them coming back. I mentioned briefly the biosecurity I myself saw on the Pharos. What other steps can be taken?

Dr Belchier: We are very fortunate in that we have a whole series of detection points around the island that are monitored regularly to look for any sign of rodent activity—gnawed sticks, for example. As I mentioned earlier one of the most important things is that these measures are carried before vessels enter into South Georgia waters. There are very strict biosecurity regulations on tourist vessels and fishing vessels.

One of the most interesting developments, as I think was mentioned earlier, has been this detector dog programme based on the Falkland Islands that is now insisting as far as possible that vessels entering into the South Georgia maritime zone undergo a thorough rodent detector dog inspection in Port Stanley prior to entering South Georgia waters. These are dogs that are American trained and American owned at this point. Detector Dogs for Conservation is, I think, the name of the firm but we are in the process of training up our own dog to be based in the Falkland Islands with a South Georgia Government employee who will be in charge of that programme.

Q123 **James Gray:** It is a bit specialist but could it be replicated, for example, in BIOT, where there is a big black rat problem, is there not?

Dr Belchier: I am not too familiar with the logistics of BIOT but I would certainly say this is the type of programme that could be replicated elsewhere in the world.

Q124 **James Gray:** In some places.

Jonathan Hall: The RSPB is working in partnership with the Tristan da Cunha Government on what we think will be the next big aerial rodent eradication to follow South Georgia. That is on the World Heritage site of Gough Island in the Tristan da Cunha group to eradicate introduced mice that are driving the Tristan albatross and the Gough bunting to extinction. We have had very good liaison with all the operators at South Georgia, certainly sharing knowledge.

If I can pick up on that funding question, this Gough Island World Heritage site restoration is scheduled for next year at a cost of about £9 million. We have raised £6 million so far, of which £2.4 million has been a very generous contribution from DEFRA.

The private funding question is very interesting. South Georgia to our mind has the advantage of 10,000 to 15,000 tourists per year whereas Gough is not open to tourists—it is kept as a pristine sanctuary—and there are only 10 ships a year visiting the Tristan da Cunha group.



Basically there are zero tourists and we do not have that same exposure to wealthy individuals.

We have found it very difficult to draw attention to the plight of what is a UK responsibility as a World Heritage site but is an island that people are not able to visit. We are committed to trying to raise the majority of funding from private sources but are calling for a 40% contribution from the UK Government as a means of saving what are now the only two remaining critically endangered bird species anywhere on UK territory.

- Q125 **James Gray:** Funding is one thing but practicality is the other and the point I was making with regard to South Georgia is in a sort of way expensive but quite doable partly helped by the glaciers and all that. Can I ask you to focus on one other invasive species that might be less doable or can you talk us through other species, particularly lionfish? Could you do something similar—obviously not similar, given that it is a fish not a rat, but is there a way you could eradicate lionfish in the way the South Georgia Heritage Trust eradicated the rats and mice in South Georgia?

Catherine Wensink: The previous evidence session focused on lionfish a lot as a case study of what can happen when an invasive species is out of control. I think the general consensus in the Caribbean is that management is now the only option and eradication seems very unlikely. It is quite disappointing to hear it spreading this way. I was quite surprised to hear it has been found in Cyprus and the Azores.

I remember in 2014 there was an idea of maybe looking for LIFE funding for a big project in the Caribbean but it had to meet the requirements of LIFE in that it would impact other member states. Now, five years later, we are seeing that probably is going to impact on many other member states that do not have overseas territories. That may have been an opportunity missed in terms of the lionfish spreading back to where it came from. I think in terms of ongoing management of the lionfish, we are seeing quite a lot of research in our overseas territories and very interesting insights into its behaviour that may also help with management of it. Ongoing management of invasive species is not necessarily something that project funding is suited to because projects tend to have a two to three-year phase, and with the lionfish that is probably going to be impractical.

- Q126 **James Gray:** A final question on fishing if I may, in particular to Dr Belchier, there was a proposal last year to abolish all fisheries off the South Sandwich Islands. If that had gone ahead rather than the conclusion we did come to, what consequence would that have had for biodiversity in the South Atlantic or in the Antarctic Ocean?

Dr Belchier: That is a very interesting question. The proposal from a group of NGOs to close the South Sandwich Islands was more of a concern I suppose about future activity because there is no krill fishing within the South Sandwich Islands' waters and there has not been and there was minimal fishing back in 1994.



Our real concern as a Government—and more broadly within the Antarctic community—was there is currently a quota set for krill for that area that some other fishing nations from within the Antarctic Treaty System could argue that if the quota is removed from one area it could be taken in areas that are more sensitive on the Antarctic Peninsula. We have a very strict, tightly managed and environmentally managed, krill fishery within South Georgia waters but currently no activity in the South Sandwich Islands. Our concern was what the knock-on effects might have been had that closure taken place.

Chair: That is laying to rest some left over business from a previous report that the Committee debated at great length but we will not go into that now. I thank our four guests for a very interesting and illuminating session. We are going to take a brief two-minute break while we have the panel changeover.

Examination of witnesses

Witnesses: Dr David Aldridge, Rob Quest, Dr Tracey King and Wayne Grills.

Q127 **Chair:** We are quite short of time so I am going to start by welcoming our second panel of witnesses. I saw a few of you listening through panel one. I wonder if you could begin, as we did last time, by introducing yourselves, starting from my left with Rob Quest.

Rob Quest: Rob Quest, City of London Corporation. I am based at Heathrow Airport, where we operate the Border Inspection Post.

Chair: No pressure there then.

Wayne Grills: Wayne Grills, Chief Executive of the British Association of Landscape Industries, the trade association for landscape contractors, garden designers and suppliers to the industry.

Dr King: Good morning. My name is Tracey King and I am the Assistant Chief Executive at the Ornamental Aquatic Trade Association based in Wiltshire.

Dr Aldridge: Hi, I am David Aldridge. I head the Aquatic Ecology Group at the Department of Zoology here at Cambridge University where I do a lot of work on invasive species particularly in freshwater systems. I am also a fellow at St Catharine's College and very much involved in the BioRISC Project.

Q128 **Chair:** You have been very helpful, along with Professor Bill Sutherland, in organising today, so thank you very much indeed, Dr Aldridge. Perhaps I can start with a question to you. How well do you think the UK



HOUSE OF COMMONS

Government are doing in terms of regulating these key pathways of invasive species?

Dr Aldridge: I will talk by example looking at fresh waters because that is what I know the most about. In fact if we look at non-native species establishing in the UK's fresh waters we can see that every decade we get increasingly more and more species establishing. In fact if we look at our biota in the UK, it is quite remarkable that over 10% of our plants in our fresh waters are non-native; over half are amphibians and in fact all our decapod crustaceans—all 10 species—are non-native. Even our so-called native crayfish is non-native.

Q129 **Chair:** What is a decapod crustacean? You have to speak normal when you are talking to us. We are amateurs.

Dr Aldridge: A crayfish or a crab.

Q130 **Chair:** Creagh hears about the crayfish.

Dr Aldridge: Yes. We are seeing big increases in all these species. On the face of it you might say we are not managing these pathways very well but if you drill down and you start to look at what pathways are bringing these things in we start to see that we are very good at controlling certain pathways—for instance, now nothing is coming through the introduction for sport or for aquaculture. The big drivers are the ornamental trade and contaminants—things that are carried across perhaps primarily through international water sports events.

If we look at the two major invaders that have established in the UK in the last five or 10 years, the killer shrimp arrived in Grafham Water in 2010, and the quagga mussel arrived in Rosebery Reservoir in 2014, and these species have subsequently spread to other reservoirs, sometimes separated by long distances, so it is very likely the major pathways here are either water sports events or angling. In managing those pathways we are not particularly good still. We are not managing them.

There are some other pathways we have started to detect. We have come across a bit of an unexpected one recently, which I probably cannot go into great detail on, but we have some pretty compelling evidence that the military might be playing a part in introducing invasive species into the UK. I think this is something that might be worthy of more careful looking at because the military may do operations overseas and not necessarily employ the same strict levels of biosecurity that some of the rest of us are perhaps employing.

Q131 **Chair:** Can I just press you on that then? What are they bringing back? Is it seeds, plants, water things?

Dr Aldridge: The particular example we have is quite a major water invader. The genetic data that we have indicates that the most likely pathway is through some military activity.

Q132 **Chair:** We are about to do a National Audit Office inquiry into the MoD—



HOUSE OF COMMONS

they do environmental audits for us. We might get them to have a look at that in particular as they go through and do that work.

Dr Aldridge: Okay, that would be good. The other important issue that we are concerned about is not just introductions into the UK but then transport across UK waterbodies. At the moment we are looking in the UK at a large number of inter-basin water transfers in response to increasing populations and managing climate change. We do not know how effective any measures are in stopping things getting transported from what were once isolated waterbodies into other systems. I think we are making some progress at managing pathways but there is still quite a lot to do.

Q133 **Chair:** Can I ask Mr Grills and then Dr King about what your industries are doing to try to stop these alien invaders coming in? DEFRA's list said, "The eight unintentional pathways were horticultural escapes, contaminants and so on, and stowaways". What steps is your industry taking?

Wayne Grills: Maybe if I start and give you a feel for the size of the ornamental horticulture industry. We are now talking not about food production, but purely about ornamental horticulture. The industry last year convened a research report that was undertaken by Oxford Economics, which gave us an industry economic size of £24.2 billion contribution to GDP with about £5.4 billion of tax revenue to Government, as well as 578,000 people employed in the industry. It also highlighted that there was £1.2 billion of imports of plants. That is the kind of size of what we are dealing with purely in the ornamental horticulture sector.

I think, as a trade association, and with our membership—and we have to bear in mind of course that we are talking to part of the industry but I know that there are many other associations, bodies and so on in the industry who are doing similar work to ourselves—we sit on a number of Government working groups that DEFRA have set up such as the Tree Health Policy Group and the Oak Processionary Moth Working Group. We sit on the steering group that His Royal Highness Prince Charles established for plant health and biosecurity and a number of others as well. In terms of our membership, to our registered members, those that are wanting to do a good job, we are certainly pushing information out with regards to plant health biosecurity.

There is a plant health standard that has been achieved, which has now been publicised. The Horticultural Trades Association in fact are the leaders on the work that is taking place to develop a plant health assurance scheme.

Q134 **Chair:** Why has it taken you so long? This stuff has been coming in for decades. If I go to my local supermarket or my local garden centre I have no idea whether they are the good guys, the bad guys or the indifferent people. Why are you only now developing a standard?



HOUSE OF COMMONS

Wayne Grills: There have been a number of standards across the industry but it is about trying to find a common standard.

Q135 **Chair:** What are those standards?

Wayne Grills: There is a whole range of standards that have been used but for different parts of the industry—different sectors within the industry—and I think now what we are looking for is one.

Q136 **Chair:** What are those standards? What are they called?

Wayne Grills: They do not spring to my mind unfortunately so—

Q137 **Chair:** Okay. You cannot tell us what they are so how is the consumer meant to know when they are buying something? You are the industry representative, aren't you?

Wayne Grills: We are for landscape contractors and garden designers, not for necessarily the growers particularly. We have growers in our membership but it is not our main base. I think exactly that, we have been looking—

Q138 **Chair:** When the council comes to you and says, "We would like these X trees for these streets" how do they know where they have come from? We had the ash dieback seven years ago. Woodland Trust planted them. What have you done as a result of ash dieback, for example?

Wayne Grills: Of course a lot of that is down to the likes of DEFRA with the Animal and Plant Health Agency and their inspectors coming in. They are inspecting nurseries—

Q139 **Chair:** I am asking what you have done in your growers to stop importing diseased plants. It is not the role of Government to check on you. What checks is the industry undertaking?

Wayne Grills: I think where I am coming from—sorry, maybe I am not making this clear enough. Where I am coming from is that the growers that are in our membership, and likewise for the landscape contractors and so on, it is more about awareness of what they are looking for. I think this is where we have been pushing information out. There is a greater level of information now with regards to pest and diseases, plant health and so on than there has ever been before. A lot of that is about awareness and certainly from our point of view one of the largest risks that we face is from a general public point of view, the consumer point of view, of not understanding those things you have just referred to.

What we are looking at developing as an industry, in consultation with Government, is a plant health standard that would be recognisable, for example something that would equate itself to the red tractor scheme or the red lion scheme for eggs and so on, so that people could recognise that there is a stamp on those plants and they know that it has been sourced sustainably and healthily.

Q140 **Chair:** Were any of your landscape contractors caught up in ash dieback?



HOUSE OF COMMONS

Did any of them purchase trees that were diseased?

Wayne Grills: Not at the time, no.

Q141 **Chair:** So subsequently yes?

Wayne Grills: Sorry, at the time it was a real issue, when it first was established, no.

Q142 **Chair:** So your people knew what to look out for through the information you provided.

Wayne Grills: Yes.

Q143 **Chair:** Great, thank you. Can I move on to Dr King?

Dr King: The Ornamental Aquatic Trade Association and the industry that we represent takes our responsibility extremely seriously. To import live ornamental fish, an importer has to be authorised under the Import of Live Fish Act, and that authorisation comes from the Fish Health Inspectorate, who we work with very closely. There is a permissive list of fish species that are allowed to enter the UK for ornamental purposes.

Q144 **Chair:** When did that Act come into force?

Dr King: It came into force in 1980, I believe.

Q145 **Chair:** So 40 years-old. Has the list of fish been undated since then?

Dr King: It has been updated and my understanding is that the Fish Health Inspectorate look at that list on a regular basis.

If I just come back to a point about ornamental crayfish, there is only one species that is allowed entry into England and Wales and that is a tropical species, the common name of which is the red claw. I can give you its scientific name, which is *Cherax quadricarinatus*, but in terms of Scotland and Northern Ireland my understanding is that there are no ornamental crayfish allowed in trade.

In relation to aquatic plants and import into the UK, they are required to carry a phytosanitary certificate and undergo checks. In relation to what we as an industry are doing, we come at it from two pathways. It is about educating our industry and educating our end users. In terms of educating our industry, we need to empower them with the information that they need to initiate conversations with the customers so that they can empower those customers to make the best decisions and fulfil their responsibilities. In that respect we have produced a biosecurity guidance document. Part of that document is a biosecurity audit checklist, which covers invasive species. We also have recently launched industry-specific training.

The subject of invasive non-native species is one that contains complex terminology and some of that terminology does not translate very well into everyday language. A person may have heard of the term



“biodiversity” but they may not have a clear point of reference as to what it refers to, so the analogy that we give is to think of biodiversity as a patchwork quilt. The impact that invasive non-native species has is to take that patchwork quilt and turn it into a uniform blanket, destroying the species that are less in abundance. That gives them a clear point of reference that they can refer to their customers.

Our members also have a number of initiatives. They carry the “no release” message, warning their customers not to release ornamental fish or aquatic plants into the wild. That is carried on their own inline products. It is on their care sheets. It is on our care sheets. It is on fish transportation bags. It is on plant labels. It is on their social media presence. It is on till receipts. In terms of people buying a new pet, their outreach is in the region of about 8.5 million people.

We also are keen supporters of the Be Plant Wise campaign and we work with our colleague trade associations—we have various initiatives globally—to raise this important issue.

Q146 Chair: If I go and buy a red crayfish—I do not know what a red crayfish looks like or how big it gets—but if it gets massive or some other fish that goes and eats all my other fish and I think, “That’s not very nice,” and I just flush it down the loo, we do not have any control over what happens to that fish once it has gone out into the drains, have we? We do not know what happens. That could be a route.

Dr King: Potentially but it is highly improbable, the reason being that the tap water is treated with chemicals to make it safe for us to drink. Those chemicals such as chlorine and chloramine are highly toxic to fish. If it was to enter the tap water it is likely those chemicals would kill the fish. If that does not kill the fish it will probably be the physical trauma of being flushed down the toilet. If it makes it as far as the sewage system, again it is going to encounter a range of chemicals that are highly likely to kill that fish.

Q147 Chair: But if I felt sorry for my crayfish and took it to the local reservoir, that is a different story.

Dr King: It is a different story, yes, and that is about promoting the no release campaign and it is about making people aware of the consequences of their actions.

Q148 Chair: Thank you very much indeed. Methods of dispatching fish having now been covered, we will move on to Heathrow. Mr Quest, how does the City of London Corporation assess the pathways and prevent invasive species transported for the people who are not members of these trade associations, for the cowboys, for the illegal wildlife trade? What are you doing at Heathrow?

Rob Quest: Animals being imported by air legally are very controlled, so 100% of those consignments must go through a Border Inspection Post. We work very closely with APHA, Cefas, Fish Health Inspectorate—



Q149 **Chair:** Can you just spell out all those things please?

Rob Quest: Cefas is the Centre for Environment, Fisheries and Aquaculture Science who run the Fish Health Inspectorate based in Weymouth. APHA, is the Animal and Plant Health Agency, who are in the same location as us at the Border Inspection Post, and also with Border Force.

The consignments that we know are coming in 100% have to come to the Border Inspection Post. Part of our role is to open those consignments and check what is in there to make sure they are the right species. We do that again with the Animal and Plant Health Agency vets and also, when they are with us, the Fish Health Inspectorate; the Plant Health Inspectorate come over to us to look at aquatic plants. If it is part of the legal trade it is quite well regulated and inspected. Where things come through unknown, I should say, is down to Border Force. They will pick those up on a passenger or sometimes in other cargo, and then they will be brought to us. That is an illegal route so you are talking about illegal wildlife trade.

Sometimes within legal consignments we get things that are not supposed to be there, and that is where, if it is in aquatics, the Fish Health Inspectorate come into play. Border Force also will deal with CITES specimens that are mis-described for instance, but our role is identifying. If we got a shipment of say reptiles from the States and there were some red-eared sliders in there, which are one of the species you cannot import—they are on CITES as well as the invasive species list—we would notify Border Force and that would be taken out.

Q150 **Chair:** What is the worst thing you have ever found?

Rob Quest: The worst thing we ever found? Difficult. I think you will probably come on to it later—you were talking about pathways—but one of the difficult pathways we have is post. Some animals that come in get posted in. The international parcel depot at Coventry is very good at finding these things and they will send them down to us. They should come through a Border Inspection Post, so they send them down to us. For instance, we had 200 scorpions in the post recently. They were covered by CITES, so Border Force were involved in that case as well. You open up a little brown parcel and out jump 200 scorpions.

Chair: That is going to give us nightmares for weeks to come. Thank you very much. We are going to move on with a question from Anna.

Q151 **Anna McMorris:** Thank you very much. Just following on from Mary's question, can I ask a question about stowaways? We know that transportation of stowaways is quite a common way to get invasive species, non-native species, into the country. We heard in a previous session, for example from the RSPB, it is not just plants. It could be flatworms, for example, hidden in soil that turn out to be predators from New Zealand that prey on earthworms. What are you doing as the City of



HOUSE OF COMMONS

London to look at the specific incidence of stowaways of all manner of incidents?

Rob Quest: Because we are where we are and the airport community know us well, anyone working on the airport who finds anything brings it to us, which works quite well. Any time you pay us a visit, we will have stowaways on site. Most of the time they would not be invasives but geckos—someone mentioned geckos in the previous panel—are quite common stowaways. There are spiders and cockroaches; frogs as well. There was a discussion previously about ants; we have had ant colonies come in with reptile boxes, as well as and black widows in boxes with dogs in from Australia. For us, stowaways are quite a common occurrence. We see quite a lot of animals coming in that way.

Q152 **Anna McMorris:** Basically it is just an informal approach—keeping an eye out.

Rob Quest: It is, yes. The number of black widows we had coming in increased substantially when we went to organic grapes coming in from California. Previously they would spray them with insecticide and we would not have any stowaways on them, but as soon as they start bringing in organic food all those invertebrates survive, so we were getting people bringing over black widows o the grapes.

Anna McMorris: Wow, okay.

Chair: Going back to the pesticide ones then.

Q153 **Anna McMorris:** Dr King, what developments in technology traceability do you think could be done to improve border checks to ensure that stowaways are found as they are coming through?

Dr King: In terms of the current requirements for the importation of live fish and aquatic plants, live fish have to be accompanied by an animal health certificate and a document known as the Common Veterinary Entry Document. They have to have been inspected and when they arrive at a Border Inspection Post a percentage of that consignment would be checked.

I believe—Rob may be able to confirm this—that aquatic plants are subject to a 100% check on each consignment. Is that correct?

Rob Quest: Plants are not my forte.

Dr King: There is an issue in knowing what the trade flows and trade patterns are. That is difficult because when they come in they will typically come in under a restricted number of commodity codes. You can only categorise ornamental fish down as far as fresh water or marine. For plants, there is even less categorisation. You can take it down to outdoor or indoor; no further differentiation is possible.

In that regard we have been looking at technological solutions, and one of those is a piece of software that is being developed in the USA. It is



HOUSE OF COMMONS

being developed by Dr Andrew Rhyne and Dr Michael Tlusty and it is a species data extraction tool that takes information from a scanned packing invoice. It can look for certain names, certain patterns and trends; it can detect what species are coming in; and it can detect if it is an anomaly. It can detect if it is a CITES listed species or a banned species. It can give data on the volumes that are coming in and the trends and patterns.

Q154 Anna McMorris: Thank you but in terms of stowaways though—something hiding in the midst—what sort of technology would be needed to be able to find a stowaway?

Dr King: Ornamental fish have to be checked for diseases prior to export and then checked again on import. In relation to aquatic plants there is a move towards production methods, such as so-called “clean plants”. This is basically the production of aquatic plants. It is tissue cell culturing. They are grown and propagated under laboratory conditions so that they are free of stowaways and contaminants. That is something that the industry is starting to go more towards, is my understanding.

Q155 Anna McMorris: Can I ask anyone who would like to answer this question? Would the UK benefit from a dedicated inspectorate for invasive species looking at biosecurity prevention stowaways?

Rob Quest: I read your previous report where that was recommended. Before you go down that route I would say you need to assess the scale and scope of the problem, and where the new body’s remit would be, because I think within the other agencies already in place you have a lot of expertise in this area, from the MMO, the Marine Management Organisation, through Plant Health Agency, the Fish Health Inspectorate, Plant Health Inspectorate, Natural England—they all have their expertise in parts of the issue. Whether it is worth setting up something separate or even having a taskforce made up from experts from those existing organisations, I do think you need to map out the scale and the scope before you look at setting up something separate.

Dr King: I share Rob’s concerns about the remit of such an inspectorate, and of course there would need to be concordance with the other agencies. One thing we do experience is that these agencies have no clear line of communication with each other. Such an inspectorate would need to work with the National Wildlife Crime Unit and there would need to be a clear remit.

If the remit is enforcement, it is easier to enforce a bricks and mortar premises, because you can go and visit physical premises, but an increasing pathway is e-commerce. A lot of the businesses selling on e-commerce are not registered businesses; they are just private sellers and some of them are based outside the UK. If the remit is e-commerce then that is basically all the new body will be doing. Then there is the issue of how it will be funded. Assuming that they will be seeking full cost recovery some of that cost recovery will come from industry and we are



HOUSE OF COMMONS

already being hit by the substantial charges to legally and legitimately import something into the UK.

Chair: We will move on some Brexit questions now from James.

Q156 **James Gray:** Can I ask a couple of domestic questions? First, why is the City of London doing this, Mr Quest?

Rob Quest: Good question. The City of London has a legal duty to enforce the animal health and welfare legislation for the whole of the Greater London area; that is why we are at Heathrow because that falls within Greater London. As well as what we do there, operating the Border Inspection Post, we have to deal with any illegal imports found within Greater London as well. Currently that is mostly puppies and kittens and things like that. That is our legal statutory duty.

Q157 **James Gray:** It does slightly reconfirm Ms McMorris's question that it is the City of London one moment and Natural England the next moment, it is the animal health people the next moment, it is the fisheries people the next moment, it is the environment how's-your-father the next moment. Is there not some argument in favour of having an organisation whose responsibility it is to stop invasive species coming into the UK? It is quite an anomaly that the City of London is doing it. It seems a bit odd to me.

Rob Quest: We are doing part of it. As you say, there are a lot of organisations doing different parts of it in different parts of the country and in different areas. It is such a wide thing that you could be looking at plant diseases one minute, live animals the next—it is a very broad scope. Do you have one agency, which would have to work UK-wide at the border? You already have people at the border. I think it just needs a bit of work as to whether it would be worthwhile or whether you can use the expertise already in those organisations.

Q158 **James Gray:** A further domestic question to Dr King. You mentioned your organisation was based in Wiltshire, where?

Dr King: We are based in Westbury. I nearly forgot then.

Q159 **James Gray:** In Westbury.

Dr King: In Westbury.

Q160 **James Gray:** Where do you personally live?

Dr King: Sorry?

Q161 **James Gray:** Where do you personally live?

Dr King: I live near Melksham in Wiltshire.

Q162 **James Gray:** Whereabouts near Melksham?

Dr King: In a village about three miles outside.

Chair: It is not a canvassing session, James.



HOUSE OF COMMONS

Q163 **James Gray:** So do I, anyhow that means you are not a constituent of mine and therefore I can be as rude to you as I like. That is fine.

Chair: You are not going to be, James.

James Gray: I am not going to be, all right. At the moment TRACES, the EU organisation, is the body that lays down the rules and regulations for these things and of course when we leave on 31 October this year that will no longer apply. To what degree will changes in trade patterns thereafter affect the way that we handle these matters? Dr King maybe or Dr Aldridge.

Chair: Dr Aldridge, you have been quiet for a while.

Dr Aldridge: I will offer you a view on change in trade, because we know that the trade patterns historically have been fantastic predictors of invasion pathways. If we look at the UK and fresh water invasives, before we joined the EEC in 1973 the UK detected 44% of non-native species before any other European country, but in the last 25 years—since we have traded more directly with mainland Europe—88% of the invasive species that we have received in the UK were first detected in mainland Europe. In fact we can quite reliably predict what the next invaders are by watching them spread across Europe towards the UK. There is about a four year lag before we detect them in the UK. At the moment we have a very powerful tool by working with partners in the European Union to see what is coming next and to start to prepare.

If we change our trade patterns, which might happen under a Brexit scenario, then we could switch in the UK from being a broad scale recipient of invasives to becoming a country that is a primary donor region. That has quite a lot of implications for how we deal with invasive non-native species. First, we may not know what is coming next and therefore we cannot prepare very well. If something arrives, we will not necessarily know what it is—it may not have an invasion history—so we need to have a look at what its ecological impacts might be, what its economic and societal impacts may be. Because we cannot learn from our European neighbours we may not know what tools are available for even managing or trying to eradicate these species. I think also if we become—

Q164 **James Gray:** Before you go on can I just interrupt there for one moment? Let us imagine we have left and TRACES no longer applies. Why will that prevent us speaking to the European Union about their experience? If indeed you are right in saying these things are taking four years to trudge across the mainland of Europe before they get to us, presumably TRACES is not working all that well. In all events, even though we are an independent nation state, we will presumably still be talking to the EU in the way that we do to America or Japan or anywhere else.

Dr Aldridge: The primary issue is at the moment we are seeing stuff coming across from Europe, but if we trade more directly with countries—



HOUSE OF COMMONS

we are concerned particularly about South America and Asia—then we might get a lot of these organisms first and therefore we might have a much greater responsibility to our European partners to be dealing with these problems.

Q165 **James Gray:** We need to set up something similar in the UK to the regime that currently exists surrounding the EU, is basically what you are saying. Is that correct?

Dr Aldridge: I think so. We do have a big advantage in that we are an island nation. For example, if you are in The Netherlands the Rhine has gone through seven countries before it comes to you so you take whatever everyone else has dumped into the river. We have some better opportunities for control over our borders so I think we should be looking at other systems. I think we could probably learn quite a lot from looking at what happens in New Zealand and Australia.

Q166 **James Gray:** To what degree do you know that the Government are already doing that, perhaps in the no-deal planning or in general? They presumably have thought of this and presumably are making plans as to what we are going to do when we leave.

Dr Aldridge: I presume so.

James Gray: You do not know.

Q167 **Chair:** Mr Quest, why do you not talk to us about the UK TRACES system that we have spent £5 million on?

Rob Quest: TRACES is this EU database and it does hold a lot of intelligence of movements of animals and goods. DEFRA has set up a similar system called IPAFFS—and please do not ask me to say what IPAFFS stands for because I cannot remember, but imported products and animals, FFS—

James Gray: Protection system.

Rob Quest: Yes. It a copy of TRACES so when we do leave we will have a similar system in place but it will take time for that system to build up the intelligence that we currently have within TRACES.

Q168 **James Gray:** You would accept my point that we will presumably continue to talk to the European Union—we are not going to cut the telephone lines—and we can make use of their intelligence and they, presumably, will make use of our intelligence even though we are no longer a member.

Rob Quest: Yes, I would say that would be right.

Q169 **James Gray:** Broadly speaking I think what you are saying is “no particular effect”. Of course there are things that have to be done and we have to have our own systems but, by and large, we would hope that the biosecurity in the UK would be similar or perhaps even better after we leave the European Union.



Rob Quest: There are always opportunities. Going back to the TRACES and the IPAFFS thing, yes, it is we would need to maintain that link to the intelligence that is already in that system.

Q170 **Chair:** Can I just press you on that? TRACES is a single market mechanism so we only get access to TRACES if we stay in the single market. Otherwise is it paying a fee or how does it work? Do we know?

Rob Quest: I am not sure how it works but, from where I sit as a sort of regulator it would be important to keep access to that intelligence somehow.

Dr Aldridge: Just to maybe pick up on a few of the other risks associated with not having direct opportunities to engage with the European Union, yes, we can still talk but we cannot necessarily influence in the way that we do at the moment. If you look at invasive species management across the European Union at the moment, a large part of the projects, the collaborative EU cost actions for instance, are led and driven very predominantly by members from the UK and that allows us to share information with partners and develop collective programmes for managing and predicting future invasives. I think if we cannot have the opportunities of access to funding and involvement in these projects we have a real risk of losing an opportunity to help ask questions that are of direct relevance to the UK.

James Gray: You may well say that, but we will see. Yes, okay, understood. I am sure it will be fine. Don't worry about it. It is going to be all right. It is all going brilliantly well.

Chair: We are going to move on now very quickly with some questions from John.

Q171 **John McNally:** I would like to move you on to public and stakeholder awareness, but for your information, some 60 years ago I had no idea I was discovering invasive species in my hometown of Denny. We had a papermaking industry and we used to get esparto grass brought in by train—that would be before Dr Beeching, of course. We used to jump into the wagons looking for snakes and sometimes you could find them. We just thought they were pretty harmless bits of fun, so thank God we have improved maybe a wee bit since then or I would not be here today. I certainly did not think I would be at Cambridge to talk about an invasive species.

However, we have already spoken a wee bit on how the invasive species are affecting everybody and basically about public awareness and the doctor spoke about the horticultural escapes, the stowaways in fishing boats and so on but for our audience here and probably for the wider audience, including ourselves, could you explain what we could be doing to help prevent the spread of invasive species among ourselves? I would like to hear from Dr Aldridge about something he mentioned earlier about his own son's school. If you can make the connection, you spoke to me



earlier on about Mr Attenborough.

Dr Aldridge: Okay. Yes, I shall try to bring that into my answer then. One of the big schemes that has been put into place by the GB Non-native Species Secretariat to manage the spread of invasives in the UK is the Check, Clean, Dry campaign. This has been rolled out very broadly on quite a small budget and it has been remarkably effective. It involves putting signage up around reservoirs and it encourage users of water to check their kit, wash it down and make sure that they are not going to spread non-native species around. This was initiated in 2014 in response to the killer shrimp arrival, but it was intended to try to stop any non-native species spreading. There are some problems with this process. It works to a certain extent but it certainly does not stop everything. There are some simple tweaks that could be done. There is evidence now that if we use hot water but not at a level that can cause scalding, we can control a lot more invasive non-native species.

There are also problems associated with this scheme in implementation. One of the things that astonishes me at the moment is that there are often large international water sports events that happen in the UK where every boat that leaves the reservoir is washed down and then it is allowed to leave but no care is taken to initiate any biosecurity when that boat enters the water. It is almost like it is being driven by policy rather than common sense. I think having a better implementation and saying, "Let's look at biosecurity of what comes in as well as what goes out" from a site would enhance things a lot.

Similarly if I go to an angling lake often they encourage people to disinfect their angling gear before they enter a lake to stop the introduction of things that might harm their fishery but they do not encourage any disinfection when the kit goes offsite. We just need a lot more tied up thinking.

In relation to your David Attenborough point, we were talking earlier about how individuals can influence public perceptions. Indeed we were talking about the role that David Attenborough has played in helping to push environmental issues. I think you were suggesting that it would be rather nice to have somebody to follow in his footsteps and help perhaps push the invasive species agenda.

Q172 **John McNally:** Yes, thanks very much for that. You know the man is 93 years-old and we badly need to have somebody following in his footsteps. Quite where we get somebody with that profile I have no idea. I know the Committee has spoken about it quite regularly but the fact is that your school has brought that up and I think you told me that your son won an award for having nominated him. That public awareness is already with us. How do we get this out to everybody in a more general manner, because at the moment we seem to be talking very generally across the world but it happens on your back doorstep? I think Mary was quite right earlier on. You can say flushing a fish down the toilet will kill it, but there are other invasive species, plants, which have taken great hold,



HOUSE OF COMMONS

particularly giant knotweed, or Japanese knotweed I should say. You can take these things to reservoirs and lochs and channels and they will breed there, but people are not aware of that so the message is how do we get this out in everybody's household, indeed schools and organisations?

Chair: Maybe move that on to Dr King and Mr Grills.

Wayne Grills: We are also pushing messages out to the general public that we speak to. As part of our promotion of our members, we attend RHS shows for example. We will certainly have information available and pinpoint to the general public where they can seek further advice certainly from our members.

There is a greater campaign, however, and if I just give you a specific example. There was a British Airways flight coming in from Croatia—this was towards the end of last year—which managed to give every single passenger an olive sprig to take home with them. That is the kind of thing that we were dealing with when we are talking about public awareness. I could have understood it maybe if it was a Croatian flight but a British Airways flight should be more aware certainly of the issues of bringing things like that into the country.

The biggest issue that we see or hear of—

Q173 **Chair:** Can you just explain what the problem with that was? Are you saying that it should have been checked? What was wrong with the olive?

Wayne Grills: What we are saying is there is a potential for bringing pests and disease into the country on the olives in particular. It is a woody plant and it is known that it can be a host for Xylella, which is a growing disease in Europe at the moment as it is. But from our perspective it was about saying, "Have there been checks?" I don't think there have been, as far as we are aware. We passed it over to the Animal and Plant Health Agency for it to follow up. I think it would be, I am sure, making British Airways aware of the issues potentially surrounding that. I think overall—

Q174 **Chair:** Is the import of olive trees controlled at the moment? If I go to my garden centre and buy from one of your members, have they gone through any specific process in order to make sure that that plant is a healthy plant?

Wayne Grills: Generally speaking, yes, they will. They will be going through checks at both sides of the border, pre and post, and checked again when they come on to the nursery. There are a number of nurseries in the country at the moment that are then holding those plants for a period of time. Some are going up to 12 months on their incubation period, depending on the type of plant and what the host might be.

There is a bigger general issue here. What we hear generally is that most cuts of plants that have come in from overseas countries will probably



HOUSE OF COMMONS

come in through toiletry bags. They are hidden deep into luggage and so on and that is where we potentially have the biggest issue. Going back to our earlier issue, certainly e-commerce, online purchase and so on, if it is not controlled in the same way as nurseries that are doing right thing are controlled, then that potentially produces a great risk for us as well.

Q175 John McNally: Can I follow up on that? What kind of penalties are in place for people that are caught importing these things? I do mean unwittingly, ie the public.

Wayne Grills: As far as I am aware, I do not think there are any penalties for the public bringing them in. The rest of the panel might have different information on that, but certainly in terms of importers and growers, obviously it is a risk to their own business, let alone any fines that they may have anyway. The outbreak of something on their nursery would certainly be their biggest risk. Most nurseries, given the size of them these days, it is more than likely to close a number of nurseries down to have that kind of risk in their nursery itself.

Q176 Chair: We are going to move on, thank you very much. Dr King, you have covered a little bit about what you have been doing. Do you want to say anything else about what you are doing to raise awareness among the public?

Dr King: Just briefly, we have a number of messages. We put the no release message on to all of our care sheets and that is asking people not to release unwanted pets or unwanted fish or to dump aquatic plants into the wild. We make it clear that if somebody is considering releasing their unwanted fish into a pond or something, they might consider that to be an act of kindness. It is not an act of kindness, it is an act that is likely to cause cruelty and suffering to that animal.

Part of the issue is that in terms of sales of invasive species that are banned, there is no central portal for people to go to get the information about which species are prohibited from sale. That is something we try to do in our training, but there does need to be a central portal for that. But we also carry messages. One of our recent messages is we are asking people in England not to accept goldfish as prizes at fairs. It is a practice that is banned in Scotland and we do not consider it acceptable. It is lending to a spontaneous purchase.

If people are going to purchase an animal, a fish or a plant, buy from a reputable retailer, know what you are buying and make sure that the animals or plants' needs meet your expectations. If you are planting, plant with care. What goes into your aquarium, what goes into your pond, what goes into your garden stays there, but it is really important about the no release message. People need to just stop and think of the consequence that their actions could have at the wild's expense.

Chair: Brilliant, thank you very much. A message to take back to the Scottish Government there for you, John. It is just good to have a little



bit of revenge there. A final question from Alex.

- Q177 **Alex Sobel:** Dr Aldridge, in your research you have said that we may be on the brink of an invasional meltdown. Considering that, how effective are methods such as horizon scans and risk assessments to take on that potential meltdown?

Dr Aldridge: Thank you for reading my publications. Horizon scanning can be very effective and there are techniques that have been developed now, particularly through Bill Sutherland's work, which allow consensus and prioritisation to be developed. Most recently in the UK in 2014, we conducted a UK horizon scan of species we least wanted to establish in the UK. We listed 30 priority species. In the top 10, the first species that we selected was the quagga mussel, and within six months of publishing that paper, the quagga mussel arrived. In the last five years, I think eight of that top 10 have established in the UK, so that might show that we are very good at predicting future invaders, but probably we are rubbish at preventing them from establishing. Horizon scanning is good but it is only good if we can then do something with that information.

The challenge is that when a non-native species does arrive in the UK and it has been predicted through horizon scanning, at the moment we do not have a very clear mechanism for what we do in response to an early detection. I will give you an example. We have a clam in a Lincolnshire ditch called the gulf wedge clam. It was detected in 2015. It had no invasion history anywhere else in the world. It now occupies a 10-kilometre stretch of this river. It is nowhere else in the UK. We know that it is dominating the biomass; 90% of the bottom of that river is non-native species. We know it is driving ecological change, but we have not done anything about it. We have a tool for killing this thing in this ditch. We could eradicate it from the UK and we have a low chance of it coming back, but nobody is doing anything about it. This is the challenge we have, that we are good at horizon scanning and I think we should keep doing this, but nobody is taking a lead on then acting on early discovery. What we need is a more coherent approach to horizon scanning and implementation of actions.

- Q178 **Alex Sobel:** Two quick follow-ups on that point. First, do you think that climate change is accelerating the risks? Secondly, where does that buck stop? That example you gave in Lincolnshire, whose responsibility is it?

Dr Aldridge: Yes, climate change is definitely increasing the risks. First, it can allow species to establish in the UK that might previously have not been able to. Also it can stress our ecosystems and therefore make them more vulnerable to the establishment of non-native species, because our native biota are less able to resist the incoming organisms. Certainly with this invasional meltdown, what we are seeing is that non-native species are interacting with each other and facilitating the establishment of one another. Often if they come from the same native range, they have co-evolved together and so they help each other out in their invasions.



Where does the buck stop? I will tell you: to control that clam and to eradicate it would cost about £30,000. We are not talking about a lot of money, but time and time again we see different stakeholders, different companies saying, "You do something about it," "No, you do something about it." The problem is that when these things arrive early on, they are not necessarily causing an economic or an ecological problem. We only tend to be reactive when the costs start to ramp up, and by that stage it is too late.

What we need to do is to horizon scan and prioritise which species we think are highest risk. We can do these clever bioclimatic models that predict where these things are going to establish and we can project that under climate change scenarios and then what we can do is we can put on top of that a natural capital framework. We can cost economically what that organism would cost to the UK economy if it was to establish across that entire range. We have all the tools to do that. Then we can say, "Okay, what is your cost benefit for dealing with this when it first arrives?"

BioRISC is doing this. We are looking at the evidence base for different management interventions for major invasive species, so we can look at the databases we are collating and say, "If this arrives, this management tool will work most effectively under this environmental scenario". We have all the information there, it is just a case of tying it together and working out the cost benefit balance for us to do an eradication here or to maybe say, "Okay, we accept that this non-native is not going to be an invasive".

Q179 Alex Sobel: Obviously nobody has heard of this mussel or is aware of it, but everybody has heard about ash dieback—it has had a very high level of publicity and public concern. Mr Grills, how is the industry helping to identify prior-to-reaching-species concern so we do not have another threat like ash dieback?

Wayne Grills: This is some of the work that I was talking about earlier. I think there is more collaborative work going on now within the industry than there has ever been before. When I say across industry, that is all of the relevant associations, societies, institutions and so on, but working very much more closely with the likes of DEFRA and APHA just to make sure that the work that we are doing is certainly factual, correct and well informed from the work that the likes of DEFRA are doing.

We now have over 1,000 pests and diseases on the Plant Health Risk Register. We have about 100 more each year coming in, so that is the kind of issue that we have to deal with. It is then identifying. I think part of the issue with some of these things—and I agree with the horizon scanning—is that we have to continue to do that. I gave earlier the example of *Xylella*. *Xylella* has an incubation period of up to six months, so plants can look very healthy when they come through the borders, but some of these things that are being imported from Europe can be in the ground within 48 to 72 hours of ordering.



HOUSE OF COMMONS

From our perspective, what we are then looking at as part of this Plant Health Assurance Scheme, even within our membership, the landscape contractors who are receiving these plants that hopefully have been through all the checks already, then having what we might class as the equivalent to a first aider, so a plant health assurance person within each business that can then certainly be monitoring and maintaining that looking forward. But I think absolutely working more closely with the horizon scanning, the work that we are doing already across a wide range of pests and diseases and invasives is absolutely necessary moving forward.

There is an issue for DEFRA in terms of that. I know they have ramped up their inspectors by about 100 and I think there is a plan to bring on another 100 further down the line. That takes a bit of time of course to get them up to speed, the right people with the right qualifications. As we have already heard today, there are specific organisations that have specialisms and I think sometimes specialisms go certainly within the plant arena as well.

Q180 Alex Sobel: Dr King, a good example of horizon scanning and a risk assessment was your own organisation's findings nearly 20 years ago that we should stop selling water fern, parrot's feather, floating pennywort, water primrose and Australian swamp stonecrop—I have no idea what the last one is—but it took nearly 15 years from you identifying it until the Government banned sales in 2014. We are five years on from that. Is it likely that we would have a repeat of that with other species or have the Government improved their effectiveness?

Dr King: In terms of the Government listening to us, we have no formal gateway to Government. We can raise concerns that we have with the GB Non-native Species Secretariat or the Fish Health Inspectorate. We were an early adopter of voluntary controls and we have been looking at agreements that the UK may want to look at—for example, the New Zealand Government Industry Agreement for Biodiversity Readiness and Response or something like the Dutch aquatic plant covenant, which is the Covenant Waterplanten—but because there is a narrow range of engagement, industries such as ourselves are not invited to horizon scanning workshops.

Our industry members have a breadth and depth of experience that should and could be tapped into. It should be, because it would enable and enhance capacity-building and it would build on all of our respective organisations' strengths, because at the end of the day, we all have the same common goal, we want to protect biodiversity. But we do need that formal gateway to Government so we can get our concerns highlighted, because we do horizon scan, we do keep a lookout. If something comes on our radar, we want to report it. We will put in a voluntary control, but it is being compounded by a lack of enforcement and it is also being compounded by e-commerce.

Q181 Alex Sobel: Obviously you want that to be put on a statutory footing so



HOUSE OF COMMONS

you are statutorily invited to be involved in horizon scanning. Would you like to put any species on the record today? Obviously then the Minister will see them when we get to question him.

Dr King: At the moment we are warning our industry that because of the impacts of pan-European Union-wide bans, there are those in the sector who are turning to aquarium plants to try to plug the gap that has been left by banned species, which present no biosecurity risk to the UK. One of those things they are doing involves a species called *Egeria densa*, which is an aquarium plant; it should only be used as an aquarium plant. We are aware that there are some sellers who are promoting it for use in ponds. It should not be used for ponds and we have made that very clear in our messaging. That is a specific example I can give to you today.

Q182 **Anna McMorris:** To quickly follow up on that, you don't have a direct pathway into the UK Government. Coming from Cardiff and having set up the Cardiff Research into Infection and Parasites in Ecological Systems, CRIPES, do you have a direct pathway into Welsh Government? Because of course they work very closely and I know the Ministers work very closely with Cardiff University.

Dr King: I used to be a member of that research group and I still have links to them, but in terms of formal engagement with the Welsh Government, no. We are on working groups and we attend those working groups, but in terms of highlighting and getting our concerns listened to by Government, we can informally do it through agencies such as DEFRA or the GB Non-native Species Secretariat or the Fish Health Inspectorate, but in terms of a direct line, no, we don't have a direct line of engagement.

Chair: Perhaps next time you could go to your next-door neighbour constituency MP and raise your concerns directly with James Gray. Just a thought for the future.

James Gray: He will act immediately and very effectively on looking after you, yes.

Chair: He alleges, he alleges. We have had a lot of food for thought today. I am particularly struck by the gulf wedge clam and I want to know whether they are good to eat and whether or not there would be any interest from people to go out and dig them up with this tool and have one of the rarest clams in the UK. I am sure that would do very well on some of the dining tables in the posher restaurants.

I thank all of our witnesses from both panels, colleagues, and the Committee staff who have helped us make the trip and got us all here in one piece, and are now bracing themselves to herd the cats to go back to London. I thank our audience for coming here and being with us today. We are finishing slightly late, for which I can only apologise, but I hope you agree it has been a very interesting session. Once more, thanks to Lord Des Browne, Dr David Aldridge, Professor Bill Sutherland and Sir



HOUSE OF COMMONS

Mark Welland for hosting us here.