

Gyrodactylus salaris

Arthur Griffith – Chairman of the Gs Task Force

Thank you Gordon. Good afternoon, ladies and gentlemen. After the last three or four questions, I'm wondering if I should not go to the fire escape now.

I got a phone call in May last year from the chief Veterinary Officer, who told me that Gordon's department were looking for somebody to chair the task force on, and he could not pronounce it and I couldn't understand it, so we started off from a good point. Then Dave Wyman rang me up and gave me a gist of what they were looking for and asked me if I would take the job on. So, I come to this job with virtually no knowledge of fish disease, not a lot more knowledge of fisheries, but with a big background in notifiable diseases in farm animals. I think I have probably dealt with every notifiable disease we have had in this country in the last thirty years, at one level or another and I also come from the last foot-and-mouth outbreak with some very sound words of advice from Seymour's brother. Basically, if you can't manage your own stress, you can't manage anything. You can gather from that we have had one hell of a day. Right let's get on quickly.

What I want to do is quickly run through *Gyrodactylus*, what it is, where it is, how resilient this parasite is, because that might have an effect on what we can do about it. What are the risk factors involved and what action can we take? - and at that point I will come on to what the task force is doing and what we are trying to do in terms of contingency plans.

Right, what is this parasite? Well, first of all, it's a notifiable disease of salmonids. It attacks and causes problems in Atlantic salmon and we know, from some work that has been done, that Scottish salmon stocks are equally susceptible, but the Baltic salmon are not susceptible. So, that, when you read the notes that I have given you, on slide four you will see there is a deliberate mistake in there and I was going to offer a cash prize, but Gordon says he has spent it all on the lunch.

It's a fluke which feeds on the gills and skin of salmonids and it breaks down the protective barriers, so that it opens the fish up to secondary bacterial infection. It's highly fecund. In other words, it produces very rapidly and it is a Russian doll effect, when the one generation is born, the next generation is already fully formed inside it. So, from very few parasites on a fish in a very short time, in ideal conditions you can get a massive population. It is exotic to Scotland and if the task force does its job right, and everybody else pulls together, that's the way it will stay and that's the way we want it.

I don't mind writing contingency plans that never have to be actioned because it means that the preventative measures are working.

Where is it? – Well, it's definitely in Norway. They have had over forty rivers affected and, even with treatment, I think, at the last count, I think they still have twenty-seven or twenty-eight affected and they are getting fresh disease and it is still causing a problem. It has also caused major problems in northern Russia. Not the bit of Russia that comes into the Baltic, but the bit that comes right over the top, where it joins with Norway. They are the two deliberate mistakes. It does not kill salmon in western Sweden or northern Finland because

the Baltic salmon are resistant, but the parasite is present there and when we come on to talking about the risk factors, one of the risk factors for Norway was Sweden.

The status of Western Europe in some ways is unclear. Now, we are only talking about one species of parasite, but there are about four hundred *Gyrodactylus* species altogether and it is very difficult to try and prove a negative in a widespread population, particularly where the population density is not very high. It's much easier in a small confined area to go looking for one parasite.

Right, how resilient is this parasite? Because some notifiable diseases in farm live stock are not very resilient at all and you can get rid of them fairly quickly. But what about this chap?

It will for survive five to seven days off the host. So, if it kills the host it's on, it has got five to seven days to find another one, to carry on its work.

It is killed by freezing. It's killed by high temperatures. It doesn't like desiccation and it doesn't survive in full strength sea water, but there is a problem with that, in a sense, because the Norwegians have now found that it will survive in brackish water and, when some of us were across in November, they were telling us about one case where they think disease has gone from one catchment to a catchment twenty kilometres down the coast and the transfer has been on the top of sea water.

What they get in the spring is a very rapid thaw. You get a lot of fresh water coming down and it sits on the top of the fjord in a layer, forming a layer of brackish water and the parasite can migrate in the brackish water and cause problems in the next catchment. Now, you think of the number of catchments there are in Scotland and how many of these river mouths are a lot closer than twenty kilometres to each other. So, there is a problem there.

It multiplies on salmon, it multiplies on rainbow trout and it multiplies on charr and, for the purists amongst you, apologies for the spelling of charr. There are two schools of thought and I like writing in shorthand. It definitely multiplies on those three. Whether it can multiply on rainbow trout and charr sufficiently quickly to maintain a population, without a salmon host, is debatable. The evidence from laboratory work is a little bit either way, I think, but it will definitely multiply on those three. The only problem is; does it maintain a viable population without salmon being there? It does use many other species for transport.

It is very good at killing a host and then finding another one very rapidly. It will detach and find another one very rapidly if they are in the vicinity. Except, of course, where you get the whole catchment affected then, eventually, there is virtually no host left in the vicinity, but that's a long way down the line.

What are the risk factors of importing this parasite or spreading it if we get it?. Well, there are basically two. Movements and imports of live fish and ova and movements of people and equipment and I can take *Gyrodactylus* off the top of that and put in foot-and-mouth disease. I can put swine fever. I can put rabies, because basically the two major risk factors are the same for all diseases.

Certainly the Norwegian view is, if you haven't got it, you don't do anything that increases the risk of getting it and their problem, in the nineteen-seventies, was importing infected smolts from Sweden.

Right, what can we do about it if we get it in? Well, the first thing we can do is nothing at all. It's an option and I am not saying it's the right option, but it is one option.

We can seek to contain the disease, where we find it, and prevent it spreading.

We can decide on a policy of eradication or we can look at prevention. Now, you might think that one should come first and I would agree with you in a sense, but the messages about prevention are, I always think, better coming at the end.

Right; what's going to happen if we do nothing? Norwegian experience suggests that, in those catchments where they have done nothing, you will lose up to ninety-eight per cent of your salmon stocks and I think they have revised that figure now and, in ideal conditions, you probably lose about ninety per cent. But, if there is anything else going on in the catchment, that is putting the fish stocks under stress, then you are likely to lose ninety-eight per cent of your salmon stocks.

Your catchment income is going to be slashed, isn't it, and you run the risk of affecting other catchments. I don't think, in most years, that we get the massive snow melts that the Norwegians get, but it only takes one person to pick up an infected fish in one catchment, stick it in a bucket of water, drive it round to the next catchment, and drop it in and the potential is there for the next catchment to be infected.

You have also got the problem, and it's not unique to Scotland, but you have got the problem of water transfers within catchments and between catchments for hydro-electric purposes, for public water supply purposes and again it only takes one infected fish to go down the pipeline between the two areas to infect the next catchment.

Right; if we go for containment, the first thing we have got to do is put movement controls on, to control the movement of fish and the movement of fish ova. If there are fish passes in the system, we are probably going to want to close them, particularly if we pick disease up early in the lower reach of the catchment. If we can close the fish pass, we might stand a chance of keeping the disease out of the upper reaches. I think we have to put a caveat on that. If we don't find it early enough, then it may well be past the fish pass before we pick the first one up.

We would have to put restrictions on fish farms, again to prevent the spread of disease and I think we would have to take each one on its merits at the time. It's situation in the catchment; is it above or below a barrier? are we eventually going to go for a system of eradication? is there any means whereby, if these fish are all destined for the table, we can actually treat the fish farm to reduce the level of disease? We will not kill it out but, with something like Formalin, we might be able to hold it to give a chance to get these fish to get to table weight and clear it out that way. But, clearly, fish farms will pose a risk, high density of susceptible fish and if the parasite gets in, it's going to multiply like wildfire.

We will have to increase the levels of surveillance we carry out at the moment, because we will need to find out exactly what is the spread of this disease and we are working on the contingency plan on a worst-case scenario that we don't find the first case of *Gs* until it has been in the country eighteen months or two years and we could have thirty to forty per cent of catchments affected. Particularly if it gets into a fish farm and then, later on, the fish from

that farm are dispersed to a wide number of catchments. And, if you think that is fanciful, look at what happened with Longtown market and foot-and-mouth disease. We had foot-and-mouth disease in seventeen locations, from Dumfries to Cornwall, to the north coast of France, before we picked the first case up.

Cleansing and disinfection regimes are going to have to be implemented and I'll come back to that with the contingency plan, because Andrew Wallace's group have been looking at that and there are some problems with what we want to do.

Water transfers; here are two ways of looking at this. We can either say that the fish disease is the most important and we can stop all water transfers. I can imagine that being politically acceptable if the world price of oil continues, do that, and the price of hydro-electricity continues to do that. So, what we may have to look at is, where do we put the containment measures on? - and it may be that if, you have four or five catchments joined together by water transfer activities, but you have only got the disease in the one catchment, you may have to put all the catchments under restriction to stop the spread of disease.

We have also got to look at the leisure pursuits. So, it's a thing that surprised me, when I started looking at this problem, are the number of people, outside the fisheries industry, that actually use water on a regular basis. Not only the industrial users, but all the leisure users as well.

Now, during foot-and-mouth, we worked on the assumption that the countryside was closed unless somebody could make a very good case for opening a piece of it. That has changed. Now the foot-and mouth draft plan assumes that the countryside remains open and you close certain areas, based on risk assessment, and I cannot see, although we have not floated it with them yet, Ministers wanting to treat fisheries any differently.

Eradication is something that has given the Task Force a fair amount of headache. It's been done routinely in Norway. It works well. They have a lot of expertise, but they have a totally different river system to what we have got in Scotland. Most of their rivers are fairly short, rapid-flowing, probably fairly small flows during the summer and very few of them with any massive lakes within the catchment.

Now, I don't think you could apply that description to the Spey, the Tay or the Tweed could you? It's a different issue and it is going to cause problems. One sub-group, within the Task Force at the moment, are looking at the criteria we might use for deciding whether a river was open to eradication or whether we have got to go for long term containment.

What would we need to do? Well, to start with, once we got the disease confirmed, we would apply the containment measures. Irrespective of whether we were going for eradication or not, we apply the containment measures. Planning an eradication campaign, the Norwegians reckon, if you've got everybody on-side and you do it properly, it is going to take anything between eighteen months and two years. Because, if you have not got fish passes or other impenetrable barriers in the river, you have got to start building barriers. So, there are all sorts of problems about planning applications and all the rest of it.

There are two chemicals you can use; one is Rotenone which is causing us a little bit of a headache at the moment. It is the chemical of choice in Norway. It's not very specific. It will kill all the fish in the river, and it will kill quite a few invertebrates and vertebrate species

that hang about along the rivers as well. It is not approved under the biocidal products directive and, if the Norwegians don't get the data in a dossier into the EC by the first of March, I think the chances of getting it approved are going to be very slim because, if it is after the first of March, then it has to go in under all the new procedures and a lot of the scientific data that the EC would require for this is not available in a form that is acceptable. Don't forget that Rotenone is the deadliest compound. It's been used for decades and I am quite sure that there was no toxicology done the first time it was ever used, so there is a real problem there. I have been in contact with the Norwegians again last week, because we are all getting slightly worried and it looks as though they are going to get their dossier in on time.

Aluminium Sulphate is very much at the trial state. They have done a couple of trial rivers with it. They are not prepared to say whether it is effective yet, as they are not far down the line of re-stocking to say whether they have got rid of the parasite, but it involves massive quantities of chemicals. You have got to get the Ph to between five and five point five and for one river they were talking about building a railway line up the side of it, to get enough stuff up there and even in the upper reaches they are still using Rotenone.

We are also looking at using gene-banking as a method of conserving stocks for re-stocking at a later date.

The Task Force was set up in June last year. It has got to report by thirty-first March two thousand and six, which is some nine weeks down the line and we have also got to prepare a contingency plan.

What are the issues in preparing the contingency plan? Firstly, we have got to look at prevention. There is no point having a contingency plan if we have no preventative measures to stop the stuff getting here, because it's going to come and Andrew Wallace's group are looking at the preventative measures which we hope we can apply.

There are problems with some of what we want to do, in terms of licensing and in terms of getting compulsory cleansing and disinfection for equipment that has been abroad. Basically, Lawyers and Local Authority enforcement Officials are telling us what you are proposing is bad legislation. It's not enforceable, don't try it. So, it's going to be very much voluntary.

There is a group looking at identification research and information and there is quite a bit of stuff come out of that about more information that we need which, unfortunately for Gordon, it's got a price tag on it.

The legal issues discussed by the legal sub-group and they are now all in the draft consultation paper and, to pick up on the question from this morning, basically, what I have done with the plan is I have put everything we have asked for in the consultation document into the legal framework of the plan with a caveat on them. If there are some that we don't get, then we are going to have to go back and visit that bit of the plan, but trying to work when there is legislation being framed both here and in Europe was not easy.

Then there is a sub group looking at gene bank.

As I see the contingency plan, basically it is SEERAD's and the industry's preparedness to deal with this disease. We have built it up as a framework for response. You cannot cover all the fine detail in one document and it is basically the framework. It involves SEERAD, Enforcement Bodies, all the fisheries interests, commercial water users and leisure pursuits and I think I said in the notes that, at the last count, we had thirty-four bodies in consultation with us. Over the last week that has grown to thirty eight.

The main issues that we have covered are what do we do in response to disease. Legislation, and this is something that staggered me; I am used to dealing with foot-and-mouth, rabies and the like, where there is one piece of legislation. So far, I have uncovered twenty pieces of major legislation, either UK, Scottish or European, that will impinge on what we can do with this disease. Because it covers all the fish disease issues, it covers all the environmental issues and it covers all the drinking water issues.

We will set up management structures within the plan We have got an appendix on roles and responsibilities of all the organisations that we will involve and there are two of them that I am waiting for agreement on.

We are setting out a paper that we are working on at the moment, for the criteria for containing or eradicating the disease, so that everybody involved knows the basis we are going to work on.

An operations manual for field staff, a communications strategy, including draft letters to organisations and the like, so you all know what is going on. The role of the stakeholders and provision of resource, because none of it is any good if you have not got the resources to do it.

And finally my last slide. Really, four key messages I want to leave with you and I could leave it with an audience of vets, farmers, plant botanists, human doctors; anybody that has to deal with any sort of disease, because they are all common.

Prevention is far better than cure and we need to keep it out.

Disease is going to be costly and damaging, not only for the fishing industry, but for a lot of other people that rely on water use as well.

Bio-security is a must and those of you that saw what happened with foot-and-mouth will realise the importance of that.

And the last one of all. It's not all about legislation. Keeping control, keeping the disease out depends on everybody doing their bit. Thank you.

Gordon Brown

Thank you very much Arthur.

We have some time for questions. Arthur, would you like to take questions? Dave, would you like to come up and join us as well, just in case? Dave Wyman heads up the fish health and welfare team in the Division back in ERAD and has the policy responsibility.

Questions and Answers

Mark Pattinson – Loch Carron Estate

Mr Griffiths. You said that *Gyrodactylus* could be carried in ova and yet we do allow the importation of Norwegian ova into fish farms. Are we absolutely certain that this is safe?

Arthur Griffiths

There is a disinfection procedure. We can't just fetch ova in because it is coming from a free area. There is a disinfection procedure as well and Dave might have more on this, but I believe that it's effective.

Unidentified speaker

How did the Baltic salmon acquire their resistance and does this offer some hope that the Atlantic salmon will acquire a resistance? And, secondly, are there any symptoms of this disease that anglers could recognise?

Gordon Brown

Could I ask Malcolm Beveridge the Director at FRS to have a go at this one?

Malcolm Beveridge

The Baltic stocks of salmon co-evolved with the parasite, so they have a natural resistance to it. In fact, it is a bit more complicated than that, but that is why. In terms of breeding for resistance for *Gyrodactylus*, there has been a certain amount of work done on this in Scotland, but we are not very hopeful.

Arthur Griffiths

As far as clinical disease goes, there is nothing particular which would pin it down to *Gyrodactylus*. Probably the strongest indication that you have got a problem is when you get absence of juveniles from an area where you would normally expect to see a lot.

Peter Maitland – Fish Conservation Centre

My question follows on from that. You mentioned surveillance earlier on in your talk, but you did not bring it in at the messages at the end. How are we going to know if we have it if we don't do routine sampling of some kind?

Dave Wyman – SEERAD

Yes, that's a fair point. There is not a great deal of surveillance undertaken at the moment. The answer is partly based on if we had it, our sampling on farms would tell us that. So, there, a limited amount of surveillance done in the wild, the emphasis is on using farms as a sentinel.

Unidentified speaker

Given all the problems of treating the rivers, getting the stuff in, the possibility of problems with the licence. Isn't prevention the only cure?

Arthur Griffiths

I would not say it is the only cure, but obviously it is the prime one. I think we can all see the problems we are going to have if we get it in, but it is the same with other diseases. If you haven't got it, and there is a legal means of keeping it out, keep it out.

Randal Nicol – River Dee Trust

This one has been around for a bit and we have been talking about *Gyrodactylus salaris*, quite rightly, as a serious threat. I have seen very little evidence, as I travel round the country, of any serious effort by the Scottish Executive to warn people, who are outside the fishery interest, that this is a serious disease. What is the Scottish Executive going to do to heighten public awareness of this threat?

Dave Wyman

We have conducted two publicity campaigns over the last couple of years, involving heavy leafleting and posterage. I was up in Lerwick, doing one of the 'Bill' roadshows, and it was very gratifying to see that *Gs* leaflets were scattered around in both the in-coming and departure lounges there. That, I understand, is typical of all our airports. These leaflets are distributed widely. You should be tripping over them on the river bank, based on the number we have produced and distributed.

Gordon Brown

Could I just ask Andrew Wallace; your preventative sub-group. Has it looked at the issue at all of wider publicity?

Andrew Wallace

We have looked at the potential risks, the potential vectors of the disease, ranging from angling, through all the recreational sports and even including things like sabotage and we are basically looking at doing a risk-assessment for each of those, but I think the point that Randal makes is well-made; that, attached to this, there really needs to be a very effective communication strategy that extends beyond the angling community, into all these risk groups and we will look at that.

Alastair Stephen

Can I just ask a question about live imports of fish? Can you just give us an up-date on the position of import of live fish?

Dave Wyman

Yes. Importation of live salmonids from Norway could happen. There are certain areas where the competent authority can certify the freedom from the full range of infections or diseases that currently represent a trade barrier. We operate under the EU regime, while we are a member of that club and we need to abide by the rules. So, it is not strictly within the gift of the Executive to impose the ban that we hear a lot about.

I think there were a number of industry representatives here earlier. They may have cared to talk to us about their perspective. Their code of practice addresses the issue by requiring that all importations of live salmonids are quarantined. I don't have the full details of what precisely that would involve, but when I put the question at the aquaculture health joint working group, a couple of days ago - "Is there any capacity for quarantine currently available in Scotland at the moment?" - the answer was, "no, there isn't," so I will leave you to read into that what you wish.

That is not to say that we are not active. We are very much aware of the risk perhaps being low, but the consequences certainly being huge, so we are in touch with the Commission and will be picking up the speed on that front in the coming weeks, to try to establish what room for manoeuvre there is, regarding fish health legislation on the one hand, and natural heritage on the other and which of the two is superior. So, we are looking at it.

Alastair Stephen

I appreciate that and the difficulties you have with the free trade arrangements maybe cutting across the sensible live imports of fish and I think that it needs to be reiterated that it is not just the live imports of salmonids. It is other fish as well that could be carrying *Gyrodactylus*. I think I speak for many in the audience that wish the Executive well in putting forward as strong a case as possible, to prevent live imports of fish.

Gordon Brown

Could I just emphasise what Dave has said. Given all this work that we are doing on *Gs*, I almost find this situation, with the potential movement of fish, embarrassing, to be perfectly honest. It is such a tricky issue. I think there are two other points I would make. One is, we are, and I wish they were still here, but they are not, because I would say this in front of them as well. We are suggesting, very strongly, to the industry that they just do not go down this road and we have further discussions with them planned. But, it is within their legal entitlement and there is a mark beyond which we cannot go.

The second thing I would say is, that you guys have a role to play as well, in all of this. We will go to the commission. Colleagues are in touch. We have a colleague here today from DEFRA today and DEFRA are going to help us in that regard. But I think, and I have already broached this with Andrew Wallace, you too should lobby the Commission about the potential problems that this gives us, particularly for our wild salmon stocks and I would invite you to lobby D G Environment in Brussels to that effect and help us.

One last question and then we will go on to Ron Wood's piece on the Future of the Forum.

Unidentified speaker

You were on about *Gs*. What about the canoeists? Most anglers are responsible, but the canoeists are not.

Arthur Griffiths

They are a group that I had not come across till I took this job on, but they are represented on the Task Force and, from what I have seen up till now, I would be very loathe to put the label of irresponsible on them because I don't think that is the case. I think that we are getting quite a lot of positive input from them. Like any other organisation, there will be bad eggs in the basket and you can say that for virtually any organisation. I think what we have got to do, rather than criticise other people, is to make sure that everybody is pulling together and to try to get all the organisations on board and I think that those of you who are in the room, that sit on the Task Force with me, will agree that, in general, we are getting a lot of co-operation and a lot of agreement. We have knocked an awful lot of issues around and they have not been easy to resolve and I would not say that we have resolved them all yet, but we are only going to do it by co-operation.

Gordon Brown

Dave and Arthur, in particular, thank you for that last session.